

**ELASTIC ARCHITECTURE:
FREDERICK KIESLER AND HIS RESEARCH PRACTICE –
A STUDY OF CONTINUITY IN THE AGE OF MODERN PRODUCTION**

Volume 1

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Abstract

“Elastic Architecture: Frederick Kiesler and His Research Practice - A Study of Continuity in the Age of Modern Production”

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This dissertation explores Austrian-American architect Frederick Kiesler's (1890-1965) vision for an “organic” paradigm of “elastic” construction technology built on the principles of continuity, mobility, flexibility, multiplicity, and interactivity. It studies the intersection of modern art, architecture, and stage design in order to examine concepts of time, space, and motion that inform Kiesler's “Endless” research project. My investigation focuses on the perceptions of time and motion studied in the plastic arts during the early 20th century that directly informed Kiesler's investigations into the contraction and expansion of space. I examine how Kiesler created a biotechnological design process using time-motion studies to adapt his innovative spatial concepts into an influential research practice achieving the *Gesamtkunstwerk*. The aim of my project is to study art and architecture *modulated* to the actions of moving bodies and systems and to question the dialectical effects of adaptable “elastic” structures on the construction of modern subjectivity and the habits of everyday life.

Kiesler belonged to a generation of artists and designers interested in the effects of time and motion on spatial perception. As a well-known theater designer who published in *G* and *De Stijl* magazines in the 1920s, Kiesler engaged in European avant-garde circles throughout his career. In search of innovation, Kiesler used extensive research from a wide variety of sources in the arts, humanities, and natural sciences to inform his work. My project examines Kiesler's research practice that led to his interest in bio-mimetic forms and Surrealist preoccupations.

Kiesler's organic forms and methodological practices contradicted the normative modern ideology and technology of his time. In his Laboratory of Design Correlation at Columbia University (1937–1941), Kiesler researched mobile and flexible structures alongside illusory environments to challenge the limits of static building structures. Continuous forms, he believed

facilitated fluid human actions that ideally contributed to more productive lives. To this end, Kiesler opposed the modern use of panel and frame rectilinear construction to advance technologies that might achieve continuous tension shell structures. Although marginalized as an architect in his time, Kiesler advanced alternative modern dwelling practices that proved to precede 21st century digital design interests.

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Preface

The historian, the historian of architecture especially, must be in close contact with contemporary conceptions.

Sigfried Giedion

I have been fortunate to participate in a network of scholarship generated and developed at Princeton University. Princeton provides an environment to cultivate knowledge and understanding in dialogue with a wide audience. This dissertation began as series of general interests surrounding the formal and material language of architecture, and evolved into a focused study on the history and theory of multi-media organic design practices.

I emphatically believe history and theory exist in dialogue with architecture practice. History, theory, and practice correlate dynamically and non-linearly. Each affords their unique intensity that extends beyond clearly defined relationships. Although this dissertation was formed in continuous dialogue with my interest and participation in contemporary architecture—it remains an historic and theoretic work guided by its own intellectual parameters, research goals, and social, political, and ethical agenda.

The methodology I employ for writing this dissertation evolved from my studies in the Rhetoric Department at the University of California, Berkeley. With respect to my audience—I elaborate a discourse that mediates between varied viewpoints. I deliberately do not adhere to any specifically known group of ideas, political camp, or social agenda. I employ critical theory throughout the text, but am equally aware of the necessity—especially in architecture—for a projective discourse that is productive and generative of new ideas—forms. Throughout this dissertation I predominantly refer to theoretical texts that directly influence and support ideas specific to the historical figures, contexts, and works being analyzed. Where for example, writings by Henri Bergson, William James, Walter Benjamin, or Sigmund Freud inform the projects investigated—I engage and discuss these theoretical texts. I look at the historical and cultural milieu in which a work is produced as I build-out my study on the history and theory of that work with keen interest to the texts and art works studied, referred, and written about at the time. My

historiography relies primarily on archival evidence from newspapers, letters, and varied original graphic and written documents and texts. Although I may extensively quote an author regarding a work, I do not rely on their ideas as a defining factor. I am not seeking to uncover authorial intention, but am endeavoring to understand what architecture and architects say and do—I am looking to explain why architecture appears as it does, and what its performative value is in relation to governing world factors.

I generated this dissertation topic in order to investigate theoretical ideas relevant to historical and contemporary architectural interests. Although historical in nature, this dissertation does not use history to debate or persuade contemporary design interests. I seek instead to understand the complexity of architectural and theoretical interests as historically conceived and consequently engaged by architects. This dissertation studies a trajectory of historical interest that pervades modern and contemporary practice. Much of the focus stems from an interest in the Austrian-American architect Frederick Kiesler's work, yet I investigate varied relevant case studies throughout this dissertation to inform theoretical ideas beyond the limits of any one architect's practice. The questions pursued throughout this dissertation constitute a larger historical and philosophic project that exceeds a pure monograph or diachronic investigation. As a work in itself, the textual argument is unapologetically crafted and at times rhetorically indirect. I do not presume my audience to be a protagonist, and at times will guide the reader to the point.

0. Introduction: Frederick Kiesler

Habit diminishes the conscious attention with which our acts are performed.

William James

“Art-tricks, or elec-tricks or mechano-clicks or the temptations of new materials in architecture cannot save the artist from his responsibility,” wrote Austrian-American architect Frederick Kiesler, September 1960.¹ As he began the design of his Universal Theater project for the Ideal Theater: Eight Concepts exhibition commissioned by the Ford Foundation in 1959, Kiesler voiced his concern for reliance on machine technology to achieve vital form. “The performances of mechanical art-toys unfortunately are, by their very nature,” he realized, “as repetitious and limited as push-button releases of jukeboxes.”² “Sculptures as electronic marionettes, architecture as engineering antics, amusing as they may be in themselves,” he argued, “must not lure us from the real issue[s].”³ Instead, “in an age of falling boundaries,” Kiesler proposed, “separatism, segregation, [and] isolation in our social life must make way as never before to integration of purposes in all fields of endeavor.”⁴ For Kiesler, art and architecture could not achieve adaptability, flexibility, and continuity on scale with the demands of an evolving society by relying on new materials and new technologies alone. Instead, through innovative temporal design strategies, Kiesler proposed responsive architecture modulated to an evolving set of parameters that could expand and contract in correlation to varied spatial needs simultaneously within one continuous form.

Kiesler’s Universal Theater was perhaps his greatest theatrical production. [Fig. 0.1] It created an inclusive spatial atmosphere that diffused the physical and social boundaries of

¹ Frederick Kiesler, “Towards the Endless Sculpture,” *The ‘Endless House’: Inside the Endless House: Art, People and Architecture: A Journal* (New York: Simon and Schuster, 1966) 30. Kiesler used his Austrian first name Friedrich until he was 36 years old. After arriving in the United States, he referred to himself almost exclusively as Frederick. I have adopted the same approach as his when referring to his first name.

² Ibid.

³ Ibid.

⁴ Ibid. 29.

architecture. It melded actors, spectators, cinema, and theater in immersive continuity with their surrounding environment. The Universal posed a complex labyrinth of sinuous expandable surfaces that formed the space of a vast program of shared activities and events. The Universal had a unified appearance, where surfaces enfolded one to the next. Using multi-media projection techniques, Kiesler created an illusory atmosphere that exploded the limits of the surrounding atmosphere. Space flowed universally—*endlessly*—about the theater as actors and spectators moved about in continuity with the changes in their environment.

Best known for his “Endless” spatial concepts, Kiesler elaborated his study of continuous space in all his theater and housing projects. As architect Philip Johnson had explained, “the importance [of Kiesler’s Endless] lies in the original conception of folding spaces around the viewer.”⁵ [Fig. 0.2] The Endless “is one of the few original concepts of the 20th century,” Paul Rudolph also agreed, “[i]f it were built the continuous space moving in complex ways would open vistas unknown to the architects.”⁶ The Endless embodied a new form of space that challenged modern perceptions. It blended folded spaces around the viewer with the illusory affects of multi-media projection techniques to create elusive elastic spatial atmospheres. Architecture would no longer be limited to stationary walls and floors—space instead could expand and contract in endless continuity.

Kiesler’s interest in continuity and the Endless spanned his entire career from his earliest explorations in “Endless Theater” in the 1920s to his Endless House and Universal Theater projects of the 1960s.⁷ Kiesler’s interests in theater framed the trajectory of his life’s work that pervaded his research in housing and building structures. Kiesler’s fascination with continuity stemmed from his social, ethical, and political desire to synthesize humanity within a surrounding atmosphere. Foremost an environmental designer, Kiesler hoped to create synthetic relationships

⁵ Letter Phillip Johnson to Reid Johnson, March 1 1965, Frederick Kiesler Papers, Box 5 of 7, Correspondence Jan-Mar 1965 Folder, Smithsonian American Archives of Art, Washington D.C. Reid Johnson was working on a project to build the Endless House in Ohio and had requested a reference for Kiesler.

⁶ Letter Paul Rudolph to Reid Johnson, January 5, 1965, Frederick Kiesler Papers, Box 5 of 7, Correspondence Jan-Mar 1965 Folder, Smithsonian American Archives of Art, Washington D.C.

⁷ See Frederick Kiesler, “Epilogue III: The Correalism of Nature,” *The ‘Endless House’: Inside the Endless House: Art, People and Architecture: A Journal* (New York: Simon and Schuster, 1966) 146. Kiesler elaborated his ideas on continuity admittedly from Einstein which will be discussed in later chapters.

between humanity, technology, and nature. He derived his environmental interests from ideas imbedded in the history and theory of the *Gesamtkunstwerk*. Kiesler fundamentally elaborated his understanding of architecture through his experience as a stage designer.

Although enamored by the promise of innovative technologies and new materials developed throughout the 20th century, Kiesler valued a comprehensive approach to designing what he described as “elastic” spatial constructions. Elasticity served as an important metaphor for Kiesler as it guided his practice beyond the limited scope of fixed static structures towards the invention of flexible and adaptable modern productions. Kiesler aimed to create more socially conscious and economically viable building atmospheres that ensured fluid motion for ease of human action. Bodies were understood to be naturally “elastic”, and Kiesler hoped to design architecture that could respond to humanity and the natural environment with the same fluidity of organic forms.

Theater proved central to Kiesler’s formation of an organic architectural language, which he expanded to the study of a wide range of building practices including his show window, gallery exhibitions, furniture, and housing designs. Kiesler was foremost a stage designer who formed environments that facilitated shifts in scenic action. Kiesler promoted a change in theater design away from the static painted backdrops of the 19th century, toward more performative staging devices developed in theater after the First World War. Kiesler was part of a revolution in avant-garde stage design that emerged by the 1920s to embrace the promise of modern science, media, and technology. Kiesler derived theatrical forms to respond to changes occurring in modern perceptions that reflected the changing industrial conditions of the 20th century. Innovatively applying film projection in conterminous relationship to built-form, he created illusory cinematic spatial effects alongside a series of moveable stage devices. Kiesler was one of the first stage designers to embrace the use of experimental animation and film projection techniques to produce theatrical spatial effects for the theater. He adapted modern staging devices to construct building structures that radically reconstituted the limits of architectural space.

This dissertation is foremost a study of Kiesler’s transformation of *theatrical space* into an architecture of a total work of art of effects that fused the theatricality of viewers, spectators,

structure, light, and sound into one endless and cohesive spatial atmosphere. In his desire to produce continuity, Kiesler was an innovator in the application of avant-garde arts and multi-media practices. He advanced animation film techniques to create contracting and expanding illusory cinematic environments that exploded architecture and its spatial boundaries. In addition, he instrumentalized the haptic techniques of film—the tactile habits of viewer perception—to motivate human bodies to action. In his stage, show window, gallery, theater, and housing projects, Kiesler relied heavily on cinematographic techniques to induce visual and tactile participation. Kiesler applied spatio-temporal strategies to advance modern production ultimately to the benefit of consumer satisfaction. Kiesler used avant-garde tactics for commercial settings to enhance modern production. He employed “time-motion” studies similar to Etienne-Jules Marey’s chronophotography experiments to create continuous physical and spatial environments that modulated to everyday habitual actions. Kiesler adapted time-motion studies invented to discipline the body for specific efficient action in the workplace to form responsive elastic constructions. Kiesler designed ergonomic systems geared to the body-in-motion that could expand and contract to the elasticity of everyday human habits.

Kiesler’s new architecture with its expanding (*détente*) structures and free-flowing surfaces performed similarly to the interiors of the *art nouveau*. As stated by Walter Benjamin, 19th century interiors used plasticity of wrought iron and concrete as a naturalized casing to “confront the technologically armed environment.”⁸ Kiesler’s continuous forms performed in correlation to the body-in-motion to parry the shock of modern media and its technology. “*Like the total artwork [Gesamtkunstwerk] of effects*” of the “organic creations” of “Berlin Picture Palaces,” as described by Siegfried Kracauer in the “Cult of Distraction,” Kiesler’s architecture “glue[d] the pieces back together after the fact.”⁹ Kiesler’s streamlined environments of continuous tension

⁸ Walter Benjamin, “Paris – the Capital of the Nineteenth Century,” *Charles Baudelaire: A Lyric Poet in the Era of High Capitalism*, tr. Harry Zohn (London: NLB, 1973), 168. Quote revised to “confronted by the technologically armed world,” in Walter Benjamin, “Paris – the Capital of the Nineteenth Century,” in *Walter Benjamin: Selected Writings, Volume 3, 1935-1938*, ed. Howard Eiland and Michael Jennings, tr. Edmund Jephcott, and Howard Eiland (Cambridge: Harvard University Press, 2002) 38.

⁹ Siegfried Kracauer, “Kult der Zerstreuung,” in *Das Ornament der Masse: Essays*, ed. Suhrkamp Verlag (Frankfurt: Suhrkamp Verlag, 1963); English translation, “The Cult of Distraction: On

shell structures opposed any notion of disjointed action—he smoothed-over distracting and separating elements to produce architectures of immersive intensity. Kiesler directed audience or viewer participation to visually and tactilely experience his architecture in unconscious fluidity. His continuous spaces and forms effectively seamed-over any interval between the snapshots of human perception. If the ancients composed the visual and temporal field and the modern sciences decomposed it—then Kiesler’s naturalized structures and responsive elastic systems posed a synthetic attempt to seam those distinctions back together.¹⁰

Kiesler’s continuous architecture performed a restorative effect. It smoothed-out disturbing differences, segregation, and disjoint through the streamlining of *modulated* surfaces. Kiesler’s continuous architectures served to naturalize the harsh, jarring, and discomforting affects of 20th century technology and its advancing forms of industry. It formed spaces that induced the perceiving body to move about autonomically in continuous ease with its surrounding environment. Following along the flux and flow, in a continuous autonomic state, in habit—humanity no longer would engage in acts of conscious attention. In a state of habitual action, conscious perception is seamed over through an animated process that gives a comforting false sense of a cohesive reality—supplanting any need for further thoughtful actions. Continuity promotes the immediate experience of reflex actions, and bypasses modes of conscious interaction. The focus of this dissertation is ultimately the study of Kiesler’s art and architecture *modulated* to the actions of moving bodies and systems in order to question the dialectical effects of adaptable “elastic” structures on the construction of modern subjectivity and the habits of everyday life.

My interest and concern to study continuity in architecture as it affects daily interactions and habits stems not only from Kiesler’s development of continuous forms during the 20th century, but also more recent preoccupations of similar ideas to Kiesler that emerged in contemporary architecture culture in the 1990s. By the turn of the 21st century, Kiesler’s

Berlin’s Picture Palaces,” in *The Mass Ornament: Weimar Essays*, tr. and ed. Tom Y. Levin (Cambridge: Harvard University Press, 1995) 324.

¹⁰ For further discussion on the decomposition of the visual and temporal field, see Anson Rabinbach, *The Human Motor: Energy, Fatigue, and the Origins of Modernity* (Berkeley: University of California Press, 1992) 114.

continuous forms of architecture resonated formally and spatially with the intellectual and technological interests prevalent in the academy and the architecture profession. Intellectually—many architects, academics and their students found formative inspiration in the writing of French philosophers Gilles Deleuze and Felix Guattari. In his writings on *Bergsonism*, *Thousand Plateaus*, and *The Fold*, Deleuze promoted architectural forms and ideas that similar to the Baroque could unfold, evolve, and envelope, to create a labyrinth of contracting and expanding continuous elastic surfaces.¹¹ Deleuze’s explicit call for an “endless” architecture in his 1988 book *The Fold* unwittingly resonated with Kiesler’s endless research project.¹² By the late 1990s generations of architects were experimenting with digital technologies that they believed might achieve complex curvilinear if not continuous organic spatial forms. Whether intended or not, their designs bore remarkable resemblance to Kiesler’s work and ideas. As digital design architect, Greg Lynn admitted—Kiesler’s concept of the endless was the best historic precedent for an interest in the unfolding of curved space.¹³ Kiesler and his work were extremely topical in light of computer animation technology that finally became available to architects by the late 1990s.

As early as 1965, however architects had already predicted the potential to use computers to generate and construct multi-warped continuous surfaces; they held two conferences on the subject in Boston at the time.¹⁴ [Fig. 0.3] In addition, Industrial Design student Raphael Roig at the University of California, Los Angeles predicted in his Master’s thesis, “*The Continuous World of Frederick J. Kiesler*” in 1965, that it would only be a matter of time before computer technology would be available to design and construct Kiesler’s vision.¹⁵ For Roig he believed, “quite possibly the new interest shown in computerized structural solutions [being developed in the 1960s for the aerospace industry] might be able to reduce to constructible terms

¹¹ See Gilles Deleuze, *Le Pli: Leibniz et le baroque* (Paris: Les Editions de Minuit, 1988); English translation, *The Fold: Leibniz and the Baroque*, tr. Tom Conley (Minneapolis: University of Minnesota Press, 1993), particularly Chapter 1.

¹² *Ibid.* 3, 7, 8, 9.

¹³ Greg Lynn, *Animate Form* (New York: Princeton University Press, 1999), 34.

¹⁴ See “Will the Computer Change the Practice of Architecture?” *Architectural Record*, January, 1965. See also “The Computer and Architecture,” *Architectural and Engineering News*, March 1965.

¹⁵ Raphael O. Roig, *The Continuous World of Frederick J. Kiesler*, University of California, Los Angeles, Master’s Thesis, Department of Industrial Design, June 1, 1965, MoMA Archive Item # 10 box 51.

the inherent intricacies of Kiesler's multiple-warped surfaces."¹⁶ In studying Kiesler's work, Roig was likely the first to realize how new computer technologies could be used in architecture—to construct continuous unfolding spaces and forms.

Roig realized however Kiesler was not the only artist and architect to design projects with characteristics that might best be advanced by the promises of new computer technology. Roig included a list of potential designs of interest, such as Claude Nicholas Ledoux's "House of the Surveyors of the River," 1773; Laurent Vaudoyer's "Design for Spherical house," 1784; Antonio Gaudi's "Church of the Sagrada Familia," 1920; Erich Mendelsohn's "sketches for Visionary Projects," 1914-1920 and "Einstein Tower," 1920-1921; Leonardo Ricci's "Sketch for New Village Community," Sicily, 1960; Antonio Sant'Elia's "Central Traffic Station," Milan 1912; Frei Otto's "Sketch for Roffing over a Mountain Valley with Cable Netting," 1953, and "Suggestion for a Main Pedestrian Artery in High Density Areas," 1962; William Katavolos' "Chemically Built House," 1954-1959; Kiyonori Kikutake's "Metabolism (Ocean City)," 1960; Paul Maymont's "Large Habitation City Units," France 1962; Nicolas Schaffer's "Sketches of Future Cities," France, 1962; Jacques Couelle's "Residence Castellaros-le-Neuf," France 1962-1965; Andre Bloc's "Sculpture Dwelling in d' Almeria," Spain 1963-1964; Stanford Hohauser's "A Beach House," 1956; Pierre Joly's "Audition Hall for Chamber Music," 1952; Jose de Rivera's "Sculpture Yellow Blac," 1946-47; and Henry Moore's "Reclining Figure," 1952. Roig's thesis although brief and unpublished established the connection between curvilinear sculptural forms, continuous spaces, and the promising use of computer technology in architecture. As future advances developed over the next thirty years, alongside intellectual interests to revive endless forms, by the beginning of the 21st century Kiesler's vision began finally to take form. [Fig. 0.4] [Fig. 0.5]

My original interest in Kiesler's work did not fall far from Roig's observations. I began studying Kiesler, not for the beauty or detail of his built work, but the depth and richness of his spatial visions and provocative ideas as they seemed to correlate to architectural interests of the early 21st century. Kiesler's theoretical, practical, and laboratory research in organic design, endlessness, vitalism, morphology, affects, media technology, elasticity, flexible constructions,

¹⁶ Ibid. 92.

multiplicity, and time-motion studies were in my opinion suspiciously similar to contemporary preoccupations. As Kiesler's project appeared unfinished and inordinately topical, it seemed important and beneficial to me as an architect, theorist, and historian to better understand his work.

As contemporary architect Ben van Berkel noted in the late 1990s, "often to understand our ambitions and secret desires, we revert to history. And if we don't others will do it for us, point us out which architects of the past were already engaged in the subjects that intrigue us now. In this individuated approach to history Frederick Kiesler has achieved a special significance in recent years."¹⁷ In the face of comparison to Kiesler's work at the time, digital design architects either forged an interest in Kiesler's work or denied any comparison. Van Berkel was not reticent to align himself with Kiesler's ideas, and "while the full extent of Kiesler's spatial aspirations is unknowable," as van Berkel recognized, "the computational techniques now at our disposal enable the deepest understanding of Kiesler ever possible." Over recent years, we have seen computer animation strategies incorporate urban growth analysis, epigenetic and morphogenetic scripting techniques, and material and visual effect experiments, alongside extensive integration of complex structural, environmental, and ecological building practices. The computer has achieved non-linear complexity in architecture beyond the limits of our own human capacity. How then have these new computer animation generated design practices advanced our understanding of Kiesler and his effect on 20th century modernism?

In researching Kiesler and his work, it became clear to me that embedded in the history and theory of animation and its technique are a series of suppositions that resurfaced at the turn of the 21st century in light of new computer practices. Similar ideas and rhetoric that pervaded contemporary design and Kiesler's interests led me to dig more deeply into areas of Kiesler's research not seen or discussed before. From Kiesler's interest in time-motion studies and early experimental animation films to his vast study of the scientific, philosophic, and even pseudo-psychoanalytic debates surrounding the contracting and expanding perceptions of continuous

¹⁷ Ben van Berkel and Caroline Bos, "A Capacity for Endlessness," *Quaderns D'Arquitectura + Urbanism*, 1999, 93.

forms and space—all these ideas became the central targets of my investigations. They led me to study Kiesler's endless spatial concepts more fully in their relationships to modern media and technology. The Endless was an architectural innovation that although imbedded in the reactions and experiments surrounding modern media and technology was not the simple by-product of new techniques or new materials alone. Kiesler's spatial innovation was at the forefront of modern architectural innovation because it was an intellectual endeavor as much as it was ever a practical, technological, or sculptural enterprise.

Kiesler's projects were innovative in design even though they were almost all impossible to construct. As Roig was well aware, Kiesler's visionary ideas exceeded the technological capacities of the 20th century. The Universal Theater was itself a speculative intellectual research project that failed at the time to garner mainstream appeal. And although the continuous forms and folding spaces of Kiesler's Endless House would prove, as Johnson believed, "a work of art the 20th century would be proud of," at an estimated cost that exceeded one million dollars, Johnson among many other potential clients chose not to take the risk to build the Endless House.¹⁸ Kiesler's Endless concept instead remained a *provocateur*—a utopian idea outside normative modern traditions.

Often slighted by artists, critics, and architects for his radical continuous constructions, by 1947, *Architectural Forum* had labeled Kiesler "Design's Bad Boy" for challenging the profession with his sinuous organic forms and complex curvilinear structures.¹⁹ Kiesler moved outside dominant trends in modern architectural practice with a theoretical approach not readily accepted or easily understood. He did not prove to be a great architect in his time, and instead survived on the periphery of the profession as a sculptor, stage designer, writer, and occasional university professor and lecturer. Kiesler was a marginalized figure in his lifetime. His work was experimental and research oriented and did not receive substantial recognition from many other architects or historians. Kiesler, however was his own greatest historicist and publicist; he crafted many articles, essays, and two substantial books that established a clear historical progression of

¹⁸ Letter Phillip Johnson to Reid Johnson, March 1 1965.

¹⁹ Ben Schmall, "Design's Bad Boy: a pint-sized scrapper who, after thirty years, still challenges all comers," *The Architectural Forum*, February 1947, 88-92.

his "Life's Pursuit" to dwell *Inside the Endless House*.²⁰ If not for his own knack for self-promotion, resilient talent for creative production, and strong support from avant-garde friends, family, and a handful of very influential admirers, he would not have achieved his now remarkable historical presence.

As Johnson famously remarked in 1965, "Kiesler's career spans the entire history of modern architecture. An original member of the *De Stijl* group in central Europe, he is the greatest non-building architect of our time."²¹ Kiesler was a visionary in his lifetime—glamorized for not compromising his design research to meet the demands of normative building practices. His career spanned the entire history of modern architecture from his early associations with avant-garde groups throughout Europe, to his success in the 1960s. Kiesler was both an artist and architect, who incorporated sculpture, film, stage, exhibition, display, theater, and housing into one synthetic research practice. Important to Kiesler's design talents were his interest in a wide range of theoretical sources and his ability to write and produce poetic, critical, and philosophic texts. Although not unique in this effort, Kiesler is among a significant group of modern architects who produced substantial theoretical writing alongside their architectural practices. Kiesler however was not a heroic modern figure; he remained on the periphery of the profession mostly due to the challenging forms he created. He has often been associated with a counter-modernist movement due in part to the non-rationalized forms he produced. However, attempts to categorize Kiesler are often thwarted in light of his seemingly inconsistent range of interests.

Scholars began to study Kiesler's life and work before his passing in 1965, and as early as 1958, Burton Weekes had written his Master's Thesis on Frederick Kiesler's 1932 Universal Theater and its implications for contemporary theater design.²² In 1958, with Lillian Kiesler's support, Katsuhiko Yamaguchi also produced a substantial catalogue on Kiesler, which he

²⁰ Frederick Kiesler, *The 'Endless House': Inside the Endless House: Art, People and Architecture: A Journal* (New York: Simon and Schuster, 1966).

²¹ See Philip Johnson, "Three Architects," *Art in America*, March, 1960, 70.

²² Burton Weekes, *Analysis of Frederick J. Kiesler's "Universal theatre" and implications of flexible theatre in America today*, Thesis (M.A.), Syracuse University, 1958. (Microfilmed--Syracuse, N.Y.: 1966)

published in Japan.²³ In 1965, Roig, completed the second Master's Thesis on Kiesler, and by 1970, Elaine Schwartz completed her thesis documenting and positioning Kiesler's life, ideas, and works.²⁴

Art historians began to look more closely at Kiesler by the end of the 1970s, and he became the subject of several studies and critiques, which all searched to position his innovation, or expose the many influences at play in his work. Kiesler became a popular subject of post-modern reconstruction that sought to promote his elusive oeuvre of *de Stijl*, Constructivist, Dada, Expressionist, and Surrealist preoccupations. In 1979, Cynthia Goodman was perhaps the first consistent art historian to study Kiesler's work.²⁵ In 1981, Michael Sgan-Cohen produced a large dissertation that catalogued Kiesler's entire series of best-known works.²⁶ In 1982 and 1984, Barbara Lesák and Roger Held re-constructed and historicized Kiesler's theater projects, particularly his early works.²⁷ And with support from Lillian Kiesler, Lisa Phillips produced a substantial exhibition and catalogue of Kiesler's work for the Whitney Museum in 1989.²⁸ Phillips perhaps best described the perception of Kiesler's work at that time. As she explained, historians heralded Kiesler for being "neither stylistically consistent nor bound by the limitations of single

²³ Katsuhiko Yamaguchi, *Frederick Kiesler, environmental artist* (Tokyo: Bijutsu Shuppan-sha) 1978.

²⁴ Raphael O. Roig, *The Continuous World of Frederick J. Kiesler*, see also Ellen Jane Schwartz, *Frederick Kiesler: his life, ideas and works*, Thesis (M.A.), University of Maryland, 1970.

²⁵ Cynthia Goodman. "The current of contemporary history; Frederick Kiesler's endless search." *Arts Magazine* 54, Sept 1979, 118-123; see also Cynthia Goodman, "Frederick Kiesler; designs for Peggy Guggenheim's Art of This Century Gallery." *Arts Magazine* LI/10, June 1977, 90-95. Cynthia Goodman, *Frederick Kiesler (1890-1965): visionary architecture, drawings and models, galaxies and paintings, sculpture, December 9-January 3, 1979* (New York: André Emmerich Gallery, 1978).

²⁶ Michael S. Sgan-Cohen, *Frederick Kiesler: Artist, Architect, Visionary—A Study of his Work and Writing*. Ph.D. Dissertation, Art History Department, City University of New York, 1989.

²⁷ Barbara Lesák, "Fredrich Kiesler's Railway-Theater Oder: Wie Spiele ich Theater auf der Achterbahn?" In *HPG*, Hochschule für Gestaltung, Offenbach/Main, 1985. See also Barbara Lesák, "Alles dreht sich, alles bewegt sich...Die dynamischen Bühnenprojekte von Friedrich Kiesler = Everything is turning, everything is moving...The dynamic stage projects of Friedrich Kiesler," *Daidalos*, n. 14, Dec. 1984, 76-84. See also Barbara Lesák, *Die Kulisse explodiert: Friedrich Kieslers Theaterexperimente und Architekturprojekte 1923-1925* (Wien: Löcker Verlag, 1988). See also R.L. Held, *Endless Innovations: Frederick Kiesler's Theory and Scenic Design* (Ann Arbor: UMI Research Press, 1982).

²⁸ Lisa Phillips, *Frederick Kiesler* (New York: Whitney Museum of American Art in association with W.W. Norton & Company, 1989)

medium or discipline.”²⁹ Kiesler had “always been difficult to categorize” she attested, because he was “an enigmatic, elusive figure.” “In our Postmodern era,” she concluded “it is precisely this interdisciplinary quality and multidimensionality that make Kiesler so intriguing.” As an artist, architect, theorist, and stage designer who participated in so many modern movements, Kiesler appeared eclectic and elusive—a bit of something for everyone. Kiesler received acclaim for his inconsistencies rather than any substantial focus or interest. Continuing along this same line of critique, in 1988 Dieter Bogner and Yehuda Safran began their research into Kiesler.³⁰ Bogner produced one of the most accurate and complete art historical surveys on Kiesler’s work prior to the 1990s, which helped to fuel wider interest in Kiesler and his designs. In addition, Anthony Vidler in 1992 offered a brief note on Kiesler’s work in *The Architectural Uncanny* which suggested insight for further architectural research.³¹

Kiesler’s work proved of greater interest to architects and architectural critics by the mid-1990s. In “Rewriting the history of Modernism,” as Denis Connolly of *the Architects’ Journal* called it—The Centre Georges Pompidou presented a significant exhibition on Kiesler’s work alongside several theoretical texts published as a Collection Monograph in 1996.³² Kiesler was “little known” at the time, but was considered “a seminal influence on Archigram, Hans Hollein, Coop Himmelblau and a whole generation of utopian ‘paper architects’,” Connolly observed.³³ Yehuda Safran, Barbara Lesák, Dieter Bogner, Michael Sgan-Cohen, and Maria Botero (who soon produced her own book on Kiesler) all contributed essays to the Pompidou Collection

²⁹ Lisa Phillips, “Environmental Artist,” in *Frederick Kiesler*, ed. Lisa Phillips (New York: Whitney Museum of American Art in association with W.W. Norton & Company, 1989) 108.

³⁰ Bogner, Dieter. *Friedrich Kiesler: Architekt, Maler, Bildhauer, 1890-1965 / Frederick Kiesler* (Wien: Löcker, 1988). See also Yehuda Safran, “Frederick Kiesler 1890-1965: AA Exhibitions Gallery, Members’ Room & Bar 8 November-9 December 1989 [exhibition review].” *AA files*, n. 20, Autumn, 1990, 83-88. See also Yehuda Safran, “Frederick Kiesler, 1890-1965: in the shadow of Bucephalus,” *AA files*, n. 20, Autumn 1990, 83-88. See also Frederick Kiesler, *Frederick Kiesler 1890-1965*, ed. Yehuda Safran. London: Architectural Association, 1989.

³¹ Anthony Vidler, *The Architectural Uncanny: Essays in the Modern Unhomely* (Cambridge: MIT Press, 1992) 153.

³² *Frederick Kiesler: Artiste-architecte, Colletion Mongraphie*, ed. Chantal Béret (Paris: Centre Georges Pompidou, 1996).

³³ Denis Connolly, “Rewriting the history of Modernism [exhibition review],” *Architects’ Journal*, n. 3, v. 204, July 18, 1996, 45.

Monograph, as did architecture theorist and historian Beatriz Colomina and several other writers.³⁴

By 1996 contemporary architectural theorists and historians Colomina, William Braham, and Mark Linder all pursued further research on Kiesler, lending understanding and credibility to Kiesler's work.³⁵ Within recent years, Mark Wigley and Detlef Mertins have also begun writing briefly on Kiesler.³⁶ Roland Lelke produced the second doctoral dissertation on Kiesler (a focused study on Kiesler's last built work, the "Book of Scrolls").³⁷ In addition, Gunda Luyken wrote a dissertation on Frederick Kiesler and Marcel Duchamp, which attempted to reconstitute their historical relationship.³⁸ My dissertation poses a different trajectory from Lelke and Luyken. I examine Kiesler and his work from focused examination of Kiesler's theoretical research as it affected and evolved throughout his design practice. Although there is significant interest to study in detail each of Kiesler's wide range of interests—it has been my intention not to see Kiesler only in terms of individual projects, but to focus on understanding the relationships between what might appear divergent interests that developed in his theater, art, architecture, exhibition, theory, and research practice.

Kiesler is perhaps all too often identified for the disparities in his work rather than the continuities. As a stage designer and architect obsessed with continuity, it seems more relevant to look comprehensively at his research practice to derive a cohesive explanation for his

³⁴ See Beatriz Colomina, "La *Space House* et la psyche de la construction," in *Frederick Kiesler: Artiste-architecte, Colletion Mongraphie* (Paris: Centre Georges Pompidou, 1996) 67-77.

³⁵ See Beatriz Colomina, "Krankheit als Metapher in der modernen Architektur = The medical body in modern architecture. *Daidalos*, n. 64, June 1997, 60-71. William W. Braham, "What's Hecuba to Him? On Kiesler and the Knot," *Assemblage* 36, ed. Michael Hays, August 1998, 20. See also William W. Braham, "Correalism and Equipoise: observations on the sustainable," *Arq* (vol. 3, no.1: 1999) 58. See also Mark Linder, "Wild Kingdom, in " *Autonomy and Ideology: Positioning an Avant-Garde in America*, ed. R.E. Somol. New York: Monacelli Press, 1997.

³⁶ Mark Wigley, "Towards the Perforated School," *Volume*, No. 1, *Archis vol. 20*, #1, 2005, 36-50. See also Mark Wigley, "The Architectural Brain," *Network Practice*, ed. Anthony Burke, Therese Tierney (New York: Princeton Architectural Press, 2007) 30-53. See also Detlef Mertins, "Where Architecture Meets Biology: an Interview with Detlef Mertins," *Interact or Die!*, ed. Joke Brouwer and Arjen Mulder, (Rotterdam: V2 Publishing, 2007) 110-131.

³⁷ Roland Lelke, *Der endlose Raum in Frederick Kieslers Schrein des Buches* (Aachen: Shaker, 1999); originally presented as the author's thesis (doctoral)--*Dead Sea Scrolls. Museums Israel Jerusalem 1950-2000*, Technische Hochschule Aachen, 1998.

³⁸ Gunda Luyken, *Frederick Kiesler and Marcel Duchamp—Rekonstruktion ihres theoretischen und künstlerischen Austausches zwischen 1925 und 1937*, Inauguraldissertation, Staatliche Hochschule für Gestaltung, Karlsruhe, Berlin, 2002.

extensive body of work. The threads that began to tie his work together for me, formed through analysis and observation of his consistent use of terminology that pervades his varied projects. As a theorist most interested in rhetorical analysis, Kiesler's use of words like "contraction and expansion," "elasticity," "continuity," and "endless" to name only a few, became perhaps the strongest indicators of a series of consistent interests that evolved throughout his work. Architects and artists are notorious for finding inspiration from the qualities and intensities of varied words or expressions. The relationship between writing and designing is a fascination that allies Kiesler and my own interests as an architect and theorist. I chose to write about Kiesler for many reasons, but always with the knowledge that Kiesler's work engaged in dialectic with the writing of words. By the speed in which he produced most of his designs, I suspect Kiesler spent as much of his time writing as he did drawing and modeling. In effect, he left an extensive archive of written work—much of which has yet to be published. He also left behind a library of books and a multitude of newspaper and magazine clippings on his work. "To understand Kiesler" means to read his drawings, his clippings, his models, his writings, and his library books. The correspondence between these materials affords original insight into Kiesler and the modern period in which he participated and produced.

Access to research materials necessary to support this dissertation became a question of the archive. Lillian Kiesler who had supported Kiesler's legacy for almost forty years came to the end of her life as I began my research. Bogner effectively inherited Lillian's role as Kiesler's greatest protagonist. As Director of the newly established Austrian Frederick and Lillian Kiesler Private Foundation Archive in Vienna, Bogner coordinated the purchase of the majority of Kiesler's original works for the Vienna government. Already beginning in 1997, he began moving the archive from New York to Vienna.³⁹ Then upon Lillian Kiesler's passing in 2001, the Vienna archive received a substantial shipment of additional work Lillian had kept stored away in her apartment, while a less extensive, but no less important portion of Lillian's personal archive was sent to the Smithsonian Archives of American Art in Washington D.C. (where some of Kiesler's

³⁹ See Letter Lillian Kiesler to the Federal Chancellor of the Republic of Austria Dr. Franz Vranitzky, June 24, 1996, Lillian Kiesler Papers 1920s-2001, Frederick Kiesler Box 21 of 41, Austrian Frederick and Lillian Kiesler Private Foundation 1993-2000 undated Folder, Smithsonian American Archives of Art, Washington D.C.

archive had been originally kept). These extensive materials sent to Vienna and Washington are still being opened, reviewed, and catalogued. With support from Bogner and the Smithsonian Archives of American Art, I have been fortunate to share in the process of uncovering these new documents. My dissertation is the first scholarly investigation to include substantial study of this new archival material. My role however has proven very different from that of the researchers at the Archive.

As The Austrian Frederick and Lillian Kiesler Private Foundation Archive is a business operation supported by the Vienna government, they carry a unique role to maintain and foster Kiesler's legacy. They manage and support a wide range of public and private research, but also are charged with a mission to support, proliferate, and re-articulate Kiesler's persona and work through gallery exhibitions, public events, marketing catalogues, traveling lectures, brochures, and multi-media reconstructions. In collaboration with the MAK (Austrian Museum of Applied Arts/Contemporary Art), the Museum für Moderne Kunst (MMK), and the Guggenheim Museum, the Vienna archive have produced several recent catalogues that have informed my research: *Friedrich Kiesler 1890 -1965: Inside The Endless House* (1997); *Frederick J. Kiesler: Endless Space* (2001), *Friedrich Kiesler: Art of this Century* (2002), *Friedrich Kiesler: Endless House 1947-1961* (2003); *Peggy Guggenheim & Frederick Kiesler: The Story of Art of This Century* (2004); *Friedrich Kiesler Designer: Seating furniture of the 30s and 40s* (2005).

Texts produced by the archive have tended towards uncovering and cataloguing the facts and details surrounding Kiesler's life, while publishing provocative images of his work. They have worked systematically to reconstruct and market the significant contribution Kiesler has made to the history of art and architecture. However they tend to avoid being critical of his work and do not often pursue close analysis of the central themes pervading and transposing throughout Kiesler's oeuvre—as modernism in general. Perhaps most curiously, their efforts in accord with Lillian Kiesler's interests have included the addition of the Kiesler Prize conferred to a growing list of award winning artists and architects—Frank Gehry, Judith Barry, Asymptote, Cedric Price, and most recently Olafur Eliasson. The Kiesler Foundation has produced several symposiums and exhibitions, which all include contributions by notable contemporary architects and theorists—

Lynn, van Berkel, Peter Eisenman and Kurt Foster to name only a few. As a private foundation, the archive works to affirm Kiesler's contribution to the history and theory of architecture, and elicit continued interest in Kiesler's works and ideas. They have an invested interest in the acceptance of Kiesler's work, and are complicit to his enduring legacy and positive reassessment.

Although Kiesler and his work fascinate me, it has never been my interest to promote his ideas, his works, or his followers. I do not aim to suggest Kiesler's work should inspire or be further pursued by practicing architects. I see instead the promise to engage in discourse surrounding Kiesler's work and to analyze the relationships between history, theory, and practice. As Kiesler was an intellectual architect with visionary ideas and provocative artistic sensibilities and insights—reading his work provides an opportunity to understand a unique trajectory of history that proved to resonate with contemporary debates. Kiesler theorized his own work from his very beginning interests in design, and left a wealth of knowledge on a wide range of subjects that although all seemingly incongruent—I believe prove surprisingly synthetic and informative of architecture and its culture.

However, due to the limited material available and at times inaccurate historical record, there has been little success in reconstructing Kiesler's youth and early background. Gaps in the archive and discrepancies in Kiesler's historical record often prove to fuel controversy surrounding Kiesler's work. Kiesler claimed to be from Vienna, although he was born September 22, 1890 in Cernauti Rumania to Dr. Julius Kiesler and Rosemarie (Maria) Meister.⁴⁰ Kiesler offered varying birth dates for no apparent reason in addition to a variety of other misleading

⁴⁰ See Maria Bottero, "Ideas and Work," *Frederick Kiesler: Arte Architettura Ambiente* (Milano: L. Electra, 1996), 190 and Valentina Sonzogni, "Bibliography," in Dieter Bogner, *Friedrich Kiesler: Art of This Century* (Wien, Hatje Cantz, 2003) 94; Kiesler and others however, gave varying dates for his birth in Vienna from December 9, 1890 to other dates of 1892, 1896 or 1898. See Lisa Phillips, "Frederick Kiesler Chronology 1890-1965," *Frederick Kiesler* (New York: Whitney Museum of American Art in association with W.W. Norton & Company, 1989), 139. Lillian Kiesler, "Frederick Kiesler Biography," New York, 10/31/80, 165, as held in the Frederick Kiesler Papers 1923-1993, Microfilm Reel, 127, Archives of American Art, Smithsonian Institution, New York. Guenther Feuerstein, "Friday January 14, 1966 (Vienna.....): Frederick Kiesler Died in New York," as held in the Frederick Kiesler Papers 1923-1993, Microfilm Reel 128, Archives of American Art, Smithsonian Institution, New York. Friedrich Achleitner, "Fascination of Space: The work of a lifetime, of the recently died Architect Frederick John Kiesler," as held in the Frederick Kiesler Papers 1923-1993, Microfilm Reel, 127, Archives of American Art, Smithsonian Institution, New York.; R.L. Held, *Endless Innovations: Frederick Kiesler's Theory and Scenic Design* (Ann Arbor: UMI Research Press, 1982), 7.

information. Kiesler's mother died when he was only one, or one and half years old, and so his father and nursemaid-housekeeper who allegedly "took better care of his body than his soul" raised him alongside his older brother and sister.⁴¹ Conflicting opinions surround the amicable nature of Kiesler's upbringing. Lillian Kiesler suggested his father "held great affection for his youngest child [Kiesler]."⁴² Showing interest in his "marked involvement with drawing," according to Lillian, Kiesler's father had arranged "for him to draw at Vienna's Spanish Riding School when he was six [years old]." On the other hand, it also appears that Kiesler broke away from the "tyrannical rule" of his older brother, the "birch rod" of his nursemaid, and the "strict disciplinarian" attitude of his father, to become a revolutionary artist.⁴³ Although his father was "chief magistrate of Vienna," and supported Friedrich's youthful interests in art, while studying at the Academy of Fine Arts, Vienna (Akademie der bildenden Künste Wien) and Viennese School of Technology it has been stated that Kiesler "survived on scholarships and prizes," and "his years as a student in Vienna (1908-1910) were marked by penury-the habit of living on next to nothing." As it seems, Kiesler's father wanted him to pursue a career in business, and their disagreement fractured Kiesler's relationship to his family.⁴⁴

Little correspondence is available between Kiesler and his family to verify his background. His nephew did move to the United States and there are letters from several relatives seeking Kiesler's assistance to immigrate to America; however, Kiesler was not close to his family and did not provide them much support. There was very little stated by Kiesler or anyone else about his childhood, except curiously in a 1949 French editorial by the Editors of *L'Architecture d'aujourd'hui*, that "due to a painful childhood he retained an almost maladaptive nervousness and an exaggerated sensitiveness."⁴⁵ What little has been said about Kiesler's childhood and youth is riddled with uncertainty, but it is clear that Kiesler preferred to state he

⁴¹ See Maria Bottero, "Ideas and Work," 190.

⁴² See Lillian Kiesler, 165.

⁴³ See R.L. Held, 8.

⁴⁴ See Maria Bottero, "Ideas and Work," 190.

⁴⁵ See The Editors, *L'Architecture d'aujourd'hui*, "Translation from the French of the Editorial of *L'Architecture d'aujourd'hui*," June 1949, as held in the Frederick Kiesler Papers 1923-1993, Microfilm Reel 127, 2, Archives of American Art, Smithsonian Institution, New York.

was from Vienna, had little financial resources, and that journalists and historians often suggest he had a “painful childhood” which marked his physical and psychological being.

Kiesler lost most of his artwork prior to 1926 in transit to the United States.⁴⁶ Although Kiesler did attend art school, and Lillian Kiesler stated he did succeed in receiving his diploma from the Academy of Fine Arts, Vienna (Akademie der bildenden Künste Wien) research indicates that he left without graduating.⁴⁷ Equally, by his own account Kiesler claimed to have served in the First World War after leaving school. Drafted, he served on the front and in the Press Corps. His participation in the First World War played an influential role in Kiesler’s formative interests. In reaction to the end of the war in 1918, he created the ideas behind what would later become his “galaxial” projects. Although no images exist today, in retrospect Kiesler described a fragmented series of portraits rising to the infinite, which veiled in white trace in grisaille “a vast field of human bodies whose proportions grew larger and larger the higher they were placed.”⁴⁸ In their composition, there were about twenty pieces of irregularly shaped paintings out of gray cardboard nailed to the wall at different intervals with a covering of white trace paper. Kiesler proposed that these traumatic fragmented images brought together in continuity were fundamental to his thinking. However as there is no evidence to support he actually drew these images, and as he would later argue his interest in continuity formed while producing his stage designs in 1923, it is difficult to draw a conclusion.⁴⁹

Much of Kiesler’s historical record he provided in his own publications and writings. In a remarkable explication of his life project and its history of development, Kiesler outlined for posterity the nature and formative history of his work in an interview given in 1961 to Thomas

⁴⁶ Kiesler had kept his work in storage in Vienna which included drawings of the human body, landscapes in different techniques, sketchbooks, woodcuts, etchings, and lithographs. However, during the Second World War, he attempted to salvage his boxes by shipping them through Switzerland, and then London. From all accounts, they never arrived. See Letter Frederick Kiesler to Mr. M.S. Henderson, British Consulate General, October 28, 1940, Frederick Kiesler Papers, Box 4 of 7, Correspondence 1940 Folder, Smithsonian American Archives of Art, Washington D.C.

⁴⁷ See Lisa Phillips, 139. Also see Valentina Sonzogni, “Bibliography,” 94.

⁴⁸ See Lillian Kiesler, 166, and Maria Bottero, 176.

⁴⁹ In my research, I have typically found some truth in all Kiesler’s statements, or if not the truth, at least a reason. Though he may occasionally shift about dates of his early works, every questionable incident, association, or anecdotal comment I researched, even when most doubtful lead to fascinating truths.

Creighton of *Progressive Architecture*.⁵⁰ In his interview Kiesler, explained how Otto Wagner's early *art nouveau* buildings, and the general lively atmosphere in cavernous cafés surrounding Vienna throughout the late 1910s to early 1920s most affected his developing ideas.⁵¹ For Kiesler, life in Vienna gave him his most creative inspiration and much of his work thereafter was an effort to pursue those first ideas. Although having little financially, eating "rice chiefly and mushrooms," he was inspired to meet in various cafes and museums around the city, being as he suggested "the caves of the artists for the germination of their ideas."⁵² Although Kiesler never stated he spoke with anyone specifically in these cafes, he elaborated on the exceptional architecture of Adolf Loos, Josef Hoffman, and Wagner and the varying daily gatherings of Adolf Loos, Alban Berg, Alfred Adler (disciple of Sigmund Freud), Robert Musil, Lenin, Albert Ehrenstein, and Franz Kafka. Despite the vibrancy of Vienna, however Kiesler's "curiosity and restless temperament" reportedly took him to Berlin where his career as a stage designer and architect began.⁵³

My research and interest in Kiesler and his work begins around these first visits to Berlin in the 1920s and although not entirely diachronic, my study leads towards an investigation of his final works in the 1960s. In light of the inconsistencies found in Kiesler's historical record, I make a concerted effort to look beyond his statements to understand his motivations and flush-out the historical and cultural facts. I am not, however interested to discuss all of Kiesler's work, but a particular strain of ideas, which I structure around Kiesler's first and last proposals for theater architecture—his Endless Theater (1925-1926) and his Universal Theater (1959-1962). Kiesler's interest in stage design, performance, and acting in space imbedded in the history and theory of the *Gesamtkunstwerk*—the total work of art of effects—are dominant themes that pervade and frame all chapters of this text. I have divided this dissertation into five chapters and a conclusion that cover Kiesler's interests in stagecraft, display, education, exhibition design, housing, and

⁵⁰ Frederick Kiesler, "Kiesler's Pursuit of an Idea," interview by Thomas Creighton, *Progressive Architecture*, July 1961, 106.

⁵¹ *Ibid.* 105.

⁵² *Ibid.* 106, 109.

⁵³ See Lisa Phillips, 139. See also Valentina Sonzogni, "Bibliography," 94.

theater architecture. Through these subjects, I develop a series of synthetic interests surrounding Kiesler's research practice on Endless architecture and modern architectural culture.

Chapter One on stagecraft investigates Kiesler's formative relationships to the European avant-garde and their relevant contribution to his concept of the Endless. "Plastic Forms of Glassy Balloon Materials: The Endless Theater," provides a close examination of Kiesler's attention to stage design from a variety of sources including Constructivism, Expressionism, Dada, *de Stijl*, and Futurism. Kiesler proved capable of melding varied ideas, seemingly antithetical, into a unique spatial practice. He found inspiration from the plastic arts, early experimental animation, machine technology, and the radical interests of a post-war European theater culture to evolve what Kiesler described as an "elastic" form of architecture. Kiesler designed theater architecture to respond fluidly, almost automatically, to the synchronous interactions and movements of actors and viewers on stage and off. Resisting the techniques and forms of any one avant-garde group, Kiesler moved among a wide variety of interests, to invent a unique architectural vision—the Endless Theater.

The second chapter—"Milieu-Suggestion shaft die Filmprojektion: Frederick Kiesler and the Applied Arts"—pursues Kiesler's adaptation of avant-garde European stage and film practices to create innovative atmospheric spaces in his New York City projects during the late 1920s. Kiesler moved to New York in 1926, and transformed the radical theories of European stage into a series of calculated display techniques that engaged urban streetscapes and city crowds. In his show windows for *Saks Fifth Avenue* for example, he introduced a wide range of artistic practices to American consumer culture. Alongside the design of his Film Guild Theater in 1928-1929, Kiesler elaborated Dadaist, *de Stijl*, and Surrealist tactics to create distracting illusory atmospheres that exploded the perceptive limits of architecture and its walls. Kiesler derived elastic expression in the form of contracting and expanding spatial surfaces that radically disturbed differences between interior and exterior urban space.

In the third chapter, "Research Practice: The Design-Correlation Laboratory," I study Kiesler's pedagogy in stage design and architecture towards the invention of an innovative research practice. In light of Kiesler's formative interests in stagecraft, film, and display, he began

extensive research to construct new forms of architecture *modulated* to perceiving bodies-in-motion. Kiesler produced assignments that radically challenged standard educational practices, and advanced a series of innovative laboratory experiments to derive elastic constructions. As demonstrated in his extensive writings and works in the 1930s and 1940s, Kiesler looked to Nature's elastic processes of growth and form for inspiration. Kiesler hoped to achieve flexibility in correlation to changing environmental and topological conditions assumed not possible in standard frame construction. To this end, Kiesler invented the study of "biotechnique"—a biotechnic design methodology inspired by the history and theory of animal and plant morphology relevant to the practice of organic building design. In the laboratory, Kiesler and his students made extensive time-motion studies and made complex investigations of aesthetics alongside explorations on perception. His Design-Correlation Laboratory developed the process and method to generate and test forms structured not on the static "universal man" promoted by Le Corbusier for example, but instead the possibility of an "evolutionary" man in motion. Kiesler derived organic forms from a highly researched theoretical practice that he maintained for over forty years, and is the central study of this dissertation topic.

Kiesler applied the results of his Design-Correlation research studies to a series of gallery exhibition designs he constructed during the 1940s. During this time, Kiesler became associated with the inner circle of the Surrealist group, and through close collaboration with André Breton and Marcel Duchamp he invented a series of gallery exhibits informed by his laboratory research. Chapter Four—"Autonomic Vision: The Galleries," provides an analysis of Kiesler's techniques for interior display. In his galleries, Kiesler synthesized ideas from stage design, show window display, and his research on vision and the body to create dynamic environments that seemed together an array of part objects in continuum.

Chapter Five, "Introjection and Projection: Frederick Kiesler and his Dream Machine," theorizes the psychoanalytic dimensions emerging in Kiesler's research alongside his fascination with the *Gesamtkunstwerk* in his housing practice from the 1930s to the 1960s. Returning to his formative study of his Endless Theater, Kiesler invents new forms of housing in contradistinction to normative modern building practices of the time. Kiesler's research opposed the modern glass

and steel right angle architecture of Le Corbusier and Mies van de Rohe with continuity inspired in part by *art nouveau*. From his Space House (1933) to his Endless House (1947, 1950, 1961) Kiesler proposed a new spatial order—the Endless, and a new construction principle—continuous tension shell technology. Kiesler radically transformed modern concepts of dwelling to support an extreme surrealist vision. His organic design interests came to bear on one of his few built works—the Shrine of the Book in Jerusalem (1959-1965). In this chapter on the psychology of interiority and dwelling, I analyze Kiesler's practice in light of his conflict with normative modern approaches to functional design.

In conclusion, "Elastic Architecture - The Universal Theater" returns to Kiesler's formative interests in stage design to pose a final discussion about his temporal strategies and research agendas to produce organic forms. In his search to dispel the boundaries and conflate the differences between interior and exterior spaces—in a most compelling work, Kiesler formed a thirty story skyscraper that provided multiple spatial contiguities—endless spaces—that supported vast revolutionary opportunities. Kiesler's Universal was his greatest social, political, and ethical program that managed to recover his youthful passions from early European avant-garde theater interests. The Universal Theater in concept merged theater, art, and business to support the radical transformation of the habits of everyday life as a new inclusive building strategy. Kiesler's architecture, in its utopian nature pushed the limits of the profession—both intellectually and structurally—it challenged functionalist modern dogma to pose multiplicity as a new spatial contingency for the 20th and 21st century.

1. Plastic Forms of Glassy Balloon Materials

Just as the vanguard in plastic art looks for its inspiration in the shapes created by modern industry,...so theatrical technique gropes towards the plastic dynamism of contemporary life, i.e. action. The fundamental principals which animate the futuristic scenic atmosphere are...the dynamism, simul[taneity] and the unity of action between man and his environment.

Enrico Prampolini

“The Theater is Dead” declared architect Friedrich Kiesler in his exhibition catalogue for the International Theater Exposition held at the Steinway Building in New York City, 1926.¹ Moving pictures had supplanted the need for traditional representational scenic techniques. The proscenium stage with its static relationship between actor and spectator had become obsolete. “The time [was]... ripe for the open play,” Kiesler contended, which demanded “an elastic space” for “freedom of movement.”²

Kiesler’s radical statements supported the exhibition of his Endless Theater project. [Fig. 1.1] His theater incorporated multiple open platforms suspended with elastic cables encased within a double shell, glass and steel, spheroid-matrix shaped structure upon which images and films could be projected. The theater was to be built without columns using tension shell construction, so that interaction between actors and spectators could circulate freely, almost automatically, along spiral ramps and stairs. Kiesler presented an innovative mobile-flexible architecture designed to contract and expand in response to the drama of the event—the motion of the crowd.

Kiesler proposed a provocative solution to complex theatrical space that simultaneously challenged modern theater and building practice. His Endless Theater housed both film and stage within a unique elliptical shaped shell that required an elaborate structure beyond known

¹ Friedrich Kiesler, “Forward,” *Exhibition Catalogue of International Theatre Exposition*, ed. by Friedrich Kiesler and Jane Heap (New York: Steinway Building, 1926) 5.

² Friedrich Kiesler, “Debacle of the Modern Theater,” *Exhibition Catalogue of International Theatre Exposition*, ed. by Friedrich Kiesler and Jane Heap (New York: Steinway Building, 1926) 18.

technology. Imagining innovative long-span construction, Kiesler developed a powerful architectural image to incorporate diverse and extensive action within a dynamic adaptable scenic atmosphere. Kiesler's Endless Theater marked a critical juncture in modern architectural practice. It suggested the formal articulation of a flexible design modeled in response to ever-changing needs of an indeterminate crowd.

Kiesler derived his Endless Theater through study of varied international sources in theater, art, film, and architecture. Inspired by Constructivism, Expressionism, Dada, *de Stijl*, and Futurism, Kiesler's Endless Theater incorporated broad multi-media practices with unique synthetic resolve. If original in concept, however, the Endless Theater appeared strikingly undeveloped in percept. It was utopian without site or detail. Its structure suggested endlessness through continuity without significant formal, programmatic, technological, or site research. Its all-inclusive dome structure performed in a markedly similar way to theaters by Norman Bel Geddes, Walter Gropius, and Futurist designers of the 1920s. The Endless Theater performed in tension with its cultural milieu.

Kiesler presented the evolution of his vision through the course of several theater performances and major exhibitions from 1922 to 1926. This first chapter studies Kiesler's theatrical designs during these formative years to examine the network of events and figures that surrounded the invention of his Endless Theater. It examines where Kiesler derived his fascination with the Endless in architecture, and how he articulated an architectural language that evolved throughout his lifetime.

The R.U.R.

Kiesler began his formative practice in theater design during the 1920s. According to his own account, Kiesler met the actor and director Stahl Nachbauer sometime prior to 1919.³

³ Frederick Kiesler, "Lecture by Frederick Kiesler on his use of Film in 1922 Production of R.U.R. by Karel Capek Delivered to Yale School of Architecture, 1947," A Tribute to Anthology Film Archives' Avantgarde Film Preservation Program An Evening Dedicated to Frederick Kiesler, Museum of Modern Art, New York, October 19, 1977 (Washington D.C.: American Film Institute, 1977) 30; reprint from unpublished lecture: "Yale School of Architecture - 1947," 13, Kiesler Lectures Folder, Austrian Frederick and Lillian Kiesler Private Foundation Archive, Vienna (hereafter referred to as the Kiesler Archive, Vienna). See also Frederick Kiesler, "Mobile setting

Kiesler impressed Nachbauer with his youthful and violent disregard for present day theater. When Nachbauer later acquired what Kiesler described as “a crazy script,” he invited Kiesler by telegram to return to Berlin to design the stage sets for Karel Capek’s robot drama Rossum’s Universal Robots, R.U.R. (W.U.R.);⁴ the R.U.R. exploited automatist fears that machines become ubiquitous, replace humans, and eventually take over the world. Kiesler recalled he had no experience as a stage designer at that time; it was his first opportunity in theater—he “just took it on.”⁵

Kiesler received critical acclaim for his stage sets for the Capek’s play, which was presented at the Theater am Kurfürstendamm in Berlin from 1922 to 1923.⁶ [Fig. 1.2] Kiesler’s stagecraft incorporated varied optical and mechanical techniques to create dynamic spatial effects. Remarkable in its time, Kiesler used mirror devices and motion picture projection techniques to create illusionary space. As he later described in his 1947 lecture at Yale School of Architecture:

when the director of the factory wanted to demonstrate to visitors how modern his factory was, he opened a diaphragm which disclosed a moving picture from the back of the stage to a circular screen and you could see the interior of an enormous factory with people walking busily back and forth. This was an illusion since the camera was walking into the interior of the factory and the audience had the impression that the actors on the stage walked into the perspective of the moving picture, too.⁷

(1922) Space-stage (1923), The Endless (1924) Woodstock,” 1, Text Box 03, Folder Man/Type Various L-M-N, Kiesler Archive, Vienna; document must have been written and annotated after 1961. Kiesler claimed to have received the telegram from the director of the R.U.R. in 1919, and had met Nachbauer sometime previously. Kiesler’s first known trip to Berlin however, was for three months in the fall of 1921. See Lisa Phillips, “Frederick Kiesler Chronology 1890-1965,” 139.

⁴ See Kiesler, “Mobile setting (1922) Space-stage (1923), The Endless (1924) Woodstock,” 1.

⁵ R.L. Held noted that prior to 1923 Kiesler and Steffie lived in an apartment in Vienna on the same floor as Franz Werfel and Franz Kafka. There were often gatherings at the Kiesler home where they held puppet shows; Kiesler built puppets, which he assigned to visitors. Kiesler never suggested his puppet shows were specifically relevant to his interests in stage design. See R.L. Held in *Endless Innovations: Frederick Kiesler’s Theory of Scenic Design*, (Ann Arbor: UMI Research Press, 1982) Revision of thesis (PhD) –Bowling Green State University 1977, 11. See also Kiesler, “Lecture by Frederick Kiesler Delivered to Yale School of Architecture, 1947,” 30; reprinted from “Yale School of Architecture – 1947”, 13. See also Kiesler, “Mobile setting (1922) Space-stage (1923), The Endless (1924) Woodstock...,” 1.

⁶The inventor was played by Konrad Viedt with leading lady Maria Fein. See “Mobile setting (1922) Space-stage (1923), The Endless (1924) Woodstock”, 1.

⁷ Kiesler, “Lecture by Frederick Kiesler to Yale School of Architecture, 1947,” 30; reprinted from “Yale School of Architecture – 1947”, 14.

Kiesler's likely use of the first silent film *La Sortie des usines Lumière* by Louis Lumière resonated with the social concerns of Capek's play.⁸ 19th and 20th century advances in photography and film had profound impact on spatial perception, enlivening worldviews. Through cinematographic technology—stop motion, animation, and close-up techniques—perception opened to new visual and corporeal expression.⁹ Kiesler employed film to challenge the spectator's field of vision and immerse the actors within the mechanical stage and scenery.

The R.U.R. questioned the impact technology had on everyday life; it conflated man and machine to challenge their relationship. Kiesler's use of a tanagra device to project backstage action on stage reinforced Capek's automatist perception:

When the director of the human factory in the play pushed a button at his desk, the panel opened and the audience saw two human beings reflected from a mirror arrangement backstage. The actors appeared in this window as a foot-and-a-half tall, casually moving and talking, heard through a hidden loudspeaker. It was quite an illusion, because a minute later you saw the same actors appear on the stage in full size. There was, inevitably, a burst of applause at this moment.¹⁰

Shifting between live action onstage and moving images in the backdrop through the combination of plane and concave mirror devices, Kiesler's design provoked the spectator to question the impact automation and new technology had on real world experience. One moment the actors were images projected through mechanized surface, the next, real people engaged in action on stage. Kiesler invoked the question: are we real, images, or machines?

Culminating in the final laboratory scene, Kiesler used backstage projection and neon lights to transform the space. As the Berlin fire department flooded the screens with water to ensure the projected images would not ignite the backdrops—"making them beautifully translucent"—Kiesler projected images throughout the entire theater. As he described,

for the chemistry laboratory scene of the play, I designed a whole abstract forest of neon lights, brilliantly colored, projecting from the ceiling, walls, and floor, flashing off and on. In fact, throughout the entire play, everything was in

⁸ There is no known specific mention by Kiesler of the exact film he used.

⁹ For more on innovative early film techniques, see Katherine Singer Kováks, "George Méliés and the *Féerie*," in *Film Before Griffith*, ed. John L. Fell (Berkeley: University of California, 1983) 254.

¹⁰ Kiesler, "Lecture by Frederick Kiesler to Yale School of Architecture, 1947," 30; reprinted from "Yale School of Architecture - 1947," 14.

constant change and movement. Lights shone on the audience, the side walls moved.¹¹

Kiesler surrounded the audience in lights, images, sounds and movement with innovative theatrical technique. Kiesler's version of R.U.R. was one of the first stage designs to use film and neon lights.¹² Kiesler was quick to engage promising media and technology in theater to collapse the separation between actor and spectator, and immerse the body in technology.

An Avant-garde Career

Well received, Kiesler's innovative modern stage design launched his avant-garde career. Dada artist Hans Richter vividly recalled that *de Stijl* architect Theo van Doesburg insisted they see the play together, "we must go to the Comedy tonight, the theater on the Kurfürstendamm, there is a play by Capek W.O.R. with very modern stage sets."¹³ The show delighted van Doesburg and although the modern use of technology left Richter "feeling cold", after the performance, Richter described how he and van Doesburg, "waited for the inventive creator. We congratulated a small muscular man who in charming Viennese explained to us very interestingly the importance of technical innovations in the theater."¹⁴ Impressed by Kiesler, they became his life-long friends and most influential supporters.

¹¹ Lillian Kiesler, "Frederick Kiesler Biography," 167. See also Kiesler, "Yale School of Architecture - 1947," 14 & 15.

¹² See R. L. Held, *Endless Innovations*, 11-17.

¹³ Hans Richter, "Koepfe und Hinterkoepfe," as held at the Museum of Modern Art Archives, New York, Frederick Kiesler Papers, Item 48, undated, unpublished, 1. Upon seeing the play, van Doesburg and Richter supported young Kiesler's ambitions in art and architecture leading to a series of publications on Kiesler's writings on Tensionism, Vitalbau, and Elementarism published in *De Stijl* and *G* magazines from 1924-1927.

¹⁴ Ibid. According to Kiesler he met Richter and van Doesburg together on the third night of the play: "The third evening I recall it very clearly – I went out after the performance to the usual small corridor of the stage door entrance home (?) when a group of people pressed their way in through the stage door. Leading them was a man of good height, very good looking. He had a black shirt, white necktie, very elegantly, spats, a cane – very snobbish and arrogantly asking me – Do you know where Kiesler is? I think – I said – I know - I'm here. Without saying a word Doesburg lifted me up. The other boys gathered me out through Berlin....to a little private club, and the people who were there were van Doesberg, Lissitzky, Hans Richter...From that moment on we were the greatest friends. We stood the whole night together and really our friendship never died down." Kiesler, "Yale School of Architecture – 1947", 15.

Van Doesburg published a collage image of Kiesler's R.U.R. set design in June *De Stijl*, 1923.¹⁵ [Fig. 1.3] The collage was given ample space; it featured Kiesler's illusory effects and innovative filmic techniques. Van Doesburg inaugurated Kiesler as a member of the *de Stijl* group alongside Richter, Werner Graeff, Piet Mondrian, Aldo Camini, Gerrit Rietveld, Cornelis van Eesteren, I.K. Bonset, and George Antheil. Hans Arp, Hugo Ball, Constantine Brancusi, César Domela and Vordemberge Gildewart would join the official group in 1925.

Kiesler remained in Berlin for a few more months in 1923, where he designed his next stage set, the play *Emperor Jones* by Eugene O'Neill, directed by Berghold Viertel.¹⁶ [Fig. 1.4] Richter, interested in Kiesler's work, made a point to attend the show. Presented in a small theater in the Friedrichstrasse, the stage-sets were imaginative yet simple, more so than any other play in Europe or America at that time Richter recalled. He remembered: "Emperor Jones wandering through the Jungle: Hanging canvas-panels, unpainted, criss-cross, in which the wanderer, as in the jungle, lost his way. Now and then a spotlight on the 'walls,' the man and the path. A spooky world created out of nothing."¹⁷ For Richter, "Kiesler had created...a master-work in its simplicity," using what appeared as very simple stage techniques.¹⁸

In the sets for *Emperor Jones* [Fig. 1.5], Kiesler angled the ceiling floor and walls in the first act to direct attention on the Emperor entering the stage. As the play progressed the stage transformed, as Keiser described:

the performance started with a funnel shaped room...the floor was painted brilliant red, the sides...black and the ceiling was painted black-green; rearstage one saw just a little slit of a cyclorama. There the Emperor appeared and he walked down the incline of the floor. As he hears the beat of a tom-tom, he tries to escape. He starts to run, and as he moves the transformation of the stage begins. The drum beat gets faster and faster, indicating the passage of time, and time merges into space...the sides of the funnel open up and the ceiling opened. From the sides, flats move across

¹⁵ "Gegonstrueerd en Uitgevoerd Door Kiesler (meerdere aanzichten en beschrijving volgen): Tooneelfront Voor 'W.U.R.'" Van Capek (Opgevoerd April 1923 Te Berlijn)," *De Stijl*, ed. Theo van Doesburg, vol. VI, nos. 3/4 (Mei-Juni 1923) 43. Futurist set designer Enrico Prampolini also became an influential supporter for Kiesler. He published the R.U.R. sets in his magazine *Rivista d'Arte Futurista* in 1924. See *Rivista d'Arte Futurista*, nos. 1-2 (1924), 42. As researched by Barbara Lesák in "Visionary of the European Theater," in *Frederick Kiesler*, ed. Lisa Phillips (Whitney Museum of American Art: New York, 1989) 42.

¹⁶ *Emperor Jones* played by Oscar Homulka, witch by Valescka Gert. See Kiesler, "Mobile setting (1922) Space-stage (1923), The Endless (1924) Woodstock..." 1.

¹⁷ See Richter, "Koepfe und Hinterkoepfe," 1.

¹⁸ *Ibid.*

the stage, turning moving continuously back and forth. From the ceiling, semitransparent materials in various colors drop and move rhythmically...The Emperor's fleeing figure casts fleeting shadows. It was convincing in its dream quality, but more important to me was the translation of the beats of the drums into a continuous flow of light, moving scenery and color...This experience led me from the static aspect of a room to opening it up into multiple mobility of all its parts.¹⁹

From the slit at the rear of the stage, the Emperor arrived onto the set into a traditional rectilinear picture stage. The sets were inclined to focus spectator attention on the static funnel point perspective of the emperor in a desolate room. Alongside the increasing beat of the drum, the panicked emperor appeared plagued with dark melancholic visions and repressed memories; he anxiously tried to escape. The red and black colored sets began to move back and forth in rhythm. [Fig. 1.6] As the beating sound continued, lighting effects created semi-transparent shadows with dreamlike intensity. The motive for the sets was "in the play itself," Kiesler explained, "which [was]...a pursuit of the Emperor by his people until he escape[d]...them.... He r[an]...away, t[ook]...refuge in a forest and [was]... haunted by visions of wrong doings."²⁰ [Fig. 1.7] Fear and guilt were qualities expressed throughout the play. The story culminated with the stage sets contracting to their original position, as the Emperor committed suicide—he shot himself. [Fig.1.8]

To create the spatial effects for his *Emperor Jones* stage design, Kiesler adapted constructivist theater techniques from Alexander Vesnin and Vsevolod Meyerhold among others. Substituting angular plastic forms for painted stage backgrounds, Constructivist theater designers in the 1920s created dynamic spatial environments. In Alexander Taijrov's production of the play *Phedre* in 1922, Vesnin tilted the stage floor and created angular sidewalls to focus attention on the actors. [Fig. 1.9] By 1923, Vesnin like Meyerhold had created stage sets called "devices" that stood and moved independent of the backdrop. "In order to animate the stage," for example, Vesin "introduced...a moving truck, a moving sidewalk...a system of elevators, a turning crane, spotlights and mobile battens, and a luminous advertising device," in his 1923 production of *The*

¹⁹ Frederick Kiesler, "Kiesler's Pursuit of an Idea," interview by Thomas Creighton, *Progressive Architecture*, July 1961, 111.

²⁰ Ibid.

Man Who was Thursday.²¹ Constructivist sets actively directed spectator interest through sound and movement while at the same time provided lively environments for actors to circulate on stage.

In his sets for *Emperor Jones*, Kiesler orchestrated similar Constructivist techniques. He inclined the floor 33 degrees, in addition to slanting the ceiling and walls creating dynamic angular spatial composition. As the play progressed the stage expanded as Kiesler suggested, "indicating the passage of time".²² The static aspect of the room opened up into a multiple mobility of all its parts through continuous change set to dynamic motion.

Movement, time, and rhythm were important modern themes explored by Kiesler in his stage designs. Impressed by Kiesler's engaging kinetic sets, Richter pursued a lifelong friendship. They met in Vienna and Richter stayed with Kiesler and his first wife Steffie for a week in 1923. As Richter remembered:

On my way from Rome at six o'clock in the morning I knocked on the door of the late-rising in Vienna. I was received with so much warmth and friendliness as one does not find in Vienna anymore. I stayed for a week with Steffie and Friedrich which went like day. I met lots of people, was introduced by him to the Café Museum, had to down a dozen dumplings with prunes in order to prove my belief in Viennese cooking, had to climb St. Stephen's Cathedral, ate at the Lindenkeller and left Vienna elated and exhausted.²³

Richter and Kiesler shared intense time together, and Kiesler was invited to participate in formative discussions surrounding Richter's new magazine *G* alongside Theo van Doesburg, Werner Graeff, Tristan Tzara, Hans Arp, Man Ray, Walter Benjamin, Naum Gabo, Mies van der Rohe and Nicolas Pevsner, among others.²⁴

Richter later reflected upon Kiesler's involvement in *G* during these formative years. As Richter recalled, he first met Mies van der Rohe in 1921 through newlyweds Theo and Nelly van Doesburg when they stayed with Richter in Berlin. They went to see Mies together because they

²¹ A. Tajrov, L. Lukjanov, and A. Vesnin, *Zrelisca (Spectacles)*, September 5, 1922 as quoted in Selim Omarovich Khan-Magomedov, *Alexander Vesnin and Russian Constructivism* (New York: Rizzoli, 1986) 91.

²² Kiesler, "Kiesler's Pursuit of an Idea," 111.

²³ See Hans Richter, "Koepfe und Hinterkoepfe," 1.

²⁴ Frederick Kiesler was involved in *G* magazine from its inception as implied by a hand written letter from Hans Richter to Frederick Kiesler on October 19, 1962 asking for support to affirm the historic facts surrounding Werner Graeff's role in the magazine. See Hans Richter's letters to Frederick Kiesler, Briefe R, Mappe 2, Kiesler Archive, Vienna.

believed his architectural drawings resembled a Mondrian-painting or even one of Richter's early scrolls. Mies' spacious rooms, lines and rhythmic surfaces articulated a visual melody—a new universal visual language—developed from the program the house serves.²⁵ As Richter remembered:

We, the artists (young architects and sculptors) were all for Mies and his "living space" as we all were for, what we then called, "Elementare Gestaltung" – "Elementary-creation of form." We that were Mies van der Rohe, my friend and former pupil Werner Graeff, Van Doesburg, Lissitzky, the Dutch architect van Esteren, the Danish architect Lundberg, Holm, Eggeling, Haussmann, Gabo, Pevsener, Arp, Kiesler, etc. And we had to have a magazine, there was not a single modern magazine in Germany yet. We talked a lot about it and when in 1923, by a lucky accident, I got a small amount of unexpected money, we published our magazine "G" (the first letter of the word "Gestaltung"), the lucky solution of the title "G" was found by Lissitzky who therefore was included into the first editorial letterhead!²⁶

Kiesler was one of the initial members of *G* according to Richter. Although perhaps not a formative editor, similar to Lissitzky, Kiesler was one of the few associates or contributors to be included as an editor.²⁷ Kiesler contributed one article to *4G* in 1926, and had the official role as

²⁵ As Richter recalled, "one day in 1921 when the newlywed Theo van Doesburg was staying with Nelly, his wife, at my place in Berlin, he suggested to me to see a young architect he had just met. When I answered him that I was not too interested in architecture and architects (my father had wanted me to become one) he mentioned that the blueprints he draws for his buildings looked like a Mondrian-drawing or even a piece from my own abstract scrolls. Then of course I went and met this architect. His name was Mies van der Rohe....Indeed the wide spaceful rooms of a house he was just building looked like music in the blueprint, the kind of visual melody I was concerned with. Lines and surfaces rhythmically articulated! Not just a floor plan but a new visual language. Not just a new language, but a universal language! 'The form of a house developed from the functions it should serve is a beauty,' he explained." See Hans Richter, "As I remember Mies," unpublished, undated as held in Getty Research Institute, Research Library, Special Collections and Visual Resources, Los Angeles, CA, Hans Richter Papers 1929-1968 # 880428 Box 1, "Typescripts of articles and lectures," Folders 1-17 3 3125 00880 3823, Folder 13, 1.

²⁶ Hans Richter, "As I remember Mies," unpublished, undated as held in Getty Research Institute, Research Library, Special Collections and Visual Resources, Los Angeles, CA, Hans Richter Papers 1929-1968 # 880428 Box 1, "Typescripts of articles and lectures," Folders 1-17 3 3125 00880 3823, Folder 13, 2 & 3.

²⁷ Richter marginalizes Kiesler's editorial contribution to *G* however. Richter recalls on the occasion of Kiesler's passing in 1965 that Richter only "reserved a place for him [Kiesler] on the editorial board," of *G* as "compensation for the fact that the pictures of his works had been printed too small" in the magazine. Richter's explanation of Kiesler's limited position as editor however is inaccurate. Kiesler was only included as an editor in the June 1924 publication, and Kiesler's work was not presented in *G* until two years later in March 1926. The small images in 1926 had nothing to do with Kiesler being an editor in 1924. Kiesler's specific contribution to *G* magazine from 1923 to June 1924 is most likely as published originally in the magazine. See Richter, "Köpfe und Hinterköpfe," 1.

co-worker and editor of 3G from 1923 to 1924. Kiesler was the Austrian representative for the magazine, and was familiar with the contributors, content, and style of *G* from its inception.

Young Kiesler's involvement in *G* had significant impact on his career. *G* stood for *Gestaltung* (creation)—as formation or the process of becoming. It drew contributors from a wide variety of international artistic groups and showed strong interest in film, theater, politics, and related contemporary arts and architecture. Published irregularly from 1923 through 1926, *G* formed a central discourse surrounding avant-garde practices in Europe.²⁸ *G* did not emphasize any particular style or form, but aimed to support a universal or synthetic modern discourse for art and architecture.

3G, the publication Kiesler edited, presented a wide range of contemporary subjects and artistic approaches. Kiesler, Trotzki, Graf Arco, Vogt, Massolle und Engl, van Doesburg, Mies, Dora Benjamin, Hauer, Haussmann, and Graeff officially worked together on 3G.²⁹ Their edition appeared seemingly eclectic.³⁰ Images of laminated wood lattice construction for *Deutsche Zollbau* in Berlin, and the glass and steel construction of architect Peter Behrens' work for example, were presented alongside Tristan Tzara's and Walter Benjamin's cultural studies on photography.³¹ [Fig. 1.10, Fig. 1.11] As Mies argued in *G*, "anyone expecting to reach the industrialization of construction only through the active and contemporary form of organization is

²⁸ The first two publications of *G* were in large newspaper format that used a somewhat *de Stijl* composition. 1G featured images and texts by Richter of his film *Rhythmus 23* in juxtaposition with texts and images by Raoul Hausmann, van Doesburg, and Mies on "Optophonics", the "Elements of Creation", and the "*Burohaus*" respectively. 2G had a more restrained two-column format. 2G emphasized Mies' architecture alongside industrial building for the manufacture of automobiles in Turin and plans for the *Hochhaus* compared to the Chicago Tribune. See *G: Zeitschrift fur elementare Gestaltung*, ed. Graff, Lissitzky, Richter, Nr. 1, Juli 1923, (abbreviated here as 1G) as held at the Canadian Center for Architecture (abbreviated here as CCA). See also *G: Zeitschrift fur elementare Gestaltung*, ed. Graff, Mies v.d. Rohe, Richter, Nr. 2, Sept. 1923, (abbreviated here as 2G) as held at the CCA.

²⁹ It is not known whether Kiesler traveled to Berlin during this time nor if he actually met Dora and Walter Benjamin, or all the other members of the *de Stijl* group. Benjamin was working on "Goethe's Elective Affinities" and his *Origins of German Trauerspiel* at this time.

³⁰ 3G presented articles by Graeff on mass production, streamlining, continuity, and the car industry alongside images of revolution in St. Petersburg, 1918. There were *de Stijl* compositions by Piet Mondrian and van Doesburg. Richter published on *L'Esprit nouveau, Konstruktivismus*, and *de Stijl*. Raoul Hausmann wrote on R.H. Francés organic design theories. Ernst Schon contributed a selection on psychology and theater, and Mies wrote on "Industrial Buildings" alongside images of systematic material approaches to long-span building practices. See *G: Zeitschrift fur elementare Gestaltung*, ed. Graff, Kiesler, Mies v.d. Rohe, Richter, Nr. 3, June 1924, (abbreviated here as 3G) as held at the CCA.

³¹ See 3G, 8, 9, 15, 29, 30.

wrong.”³² G instead attempted a synthetic approach to understand industry and design as the consequence of cultural, formal, environmental, material, and structural developments in society. G put art and architecture in context within an expanded field.³³

G primarily featured the work of its editors and contributors in their cultural milieu. It presented Mies' architecture, El Lissitzky's Prouns, Graeff's studies of industry, and Kiesler's 1925 exhibition structure. All projects were shown alongside Richter's film studies. Van Doesburg originally suggested Richter initiate his own magazine to support and disperse Richter and Eggeling's innovative experimental animation studies. Central to *Gestaltung* in every edition of the magazine was extensive study of experimental animation relevant to Richter's and Viking Eggeling's early scrolls and films. [Fig.1.12] These animation studies had enormous impact on young Kiesler's developing interests.

Experimental Animation

Richter's and Eggeling's animation films inspired Kiesler's *endless* research project. Early experimental animation studied by Richter and Eggeling sought to invoke awareness of the rhythm and continuity of forms transpiring in flux. Richter and Eggeling painted abstract figures in a series on paper scrolls and films that articulated the evolution of the dynamic formation of images becoming in duration. They were directly responding to French philosopher's Henri Bergson's provocation to recover poetic experience, the *durée* lost in the interval between the snapshots of our perception. As Eggeling noted, "becoming and duration are not in any way a

³² See 3G, 8-11.

³³ G uniquely explored art and architecture emerging in contemporary culture. Mies' visionary image of glass architecture in 3G stood as symbol for G's mission. Ethereal and contextual, reflective and porous, Mies' *Entwurf eines Hochhauses am Bahnhof Friedrichstrasse*, was depicted proud—slightly out of alignment with the fabric of the existing city. Innervated if not compromised by the lines of electric cables, G presented Mies' glass architecture as the culmination and beacon of modern progress. As a complex symbol of contemporary society, Mies' design captured both ambition and desire for the vision of an aspiring generation. As Richter responded in caption, "Civilization and the supreme technical products [were]... not sufficient 'to guarantee the existence of men. Without culture nor high ideals than those of comfort, civilization must fall. The G collect[ed]...material of a possible culture." G depicted Mies' tall glass skyscraper before the apex of the future as seen from historical urban perspective. G collaged the high design ideals of its auspicious contributors in context with the culture of their time. See 3G, 8-11. See also *G: Zeitschrift fur elementare Gestaltung*, ed. Richter, Nr. 4, Marz 1926, 7, as held at the CCA.

diminution of unchanging eternity; they are its expression. Every form occupies not only space but time.... What should be grasped and given form are things in flux.”³⁴ To articulate forms in the process of becoming, Eggeling and Richter derived animate techniques that could achieve *Dehnung in der Zeit Ausdehnung in Raume*.³⁵

Richter and Eggeling lived and worked together on their scrolls and films for three years.³⁶ Through their mutual exploration by 1919, they elaborated daily formal studies of horizontal-vertical themes that Eggeling termed “instruments.”³⁷ [Fig. 1.13] “These everyday exercises were, as I remember,” Richter explained, “the real key that opened the way to a ‘continuity’.”³⁸ Eggeling was the leading spirit in all these studies Richter admitted, and it was Eggeling’s extensive readings and transcriptions of Bergson’s philosophy—his interest in continuity and becoming among other ideas from *Creative Evolution*—that fueled their designs.³⁹ Richter recalled, “in his horizontal-vertical series of drawings,...[Eggeling] had one important theme or ‘instrument’ which he called *Dehnung*—expansion, stretching. He suggested testing this instrument by painting it on a thin rubber foil so that it might expand and contract. *Dehnung* thus

³⁴ Hans Richter, “Easel-Scroll-Film,” *Magazine of Art* (February 1952), 81.

³⁵ For Eggeling’s transcriptions of “*Dehnung in der Zeit Ausdehnung in Raume*” from *Creative Evolution* by Henri Bergson, see Louise O’Konor, *Viking Eggeling 1880-1925: Artist and Film-Maker Life and Work* (Stockholm: Louise O’Konor and the Eggeling Family, 1971) Chapter 6, 95. Contraction and Expansion is a significant theme in Bergson’s project that explores conscious and unconscious perception.

³⁶ Richter came to film as a painter most interested in the value of synthetic expression—its problems and traditions. Influenced by cubism and its search for structure, yet disinterested in its fragmented appearance, Richter began to focus more closely on the interplay between positive-negative in form and color. Incorporating study of counterpoint in music from the study of Bach’s Fugues and Preludes, Richter began to articulate free abstract parts on a given plane against each other prior to being introduced to Eggeling. Eggeling equally had already developed a syntax of form relationships based on a line he described as “*Generalbass der Maler*” prior to being introduced by Tzara in 1918. See Richter, “Step by Step: an account of the transition from painting to the first abstract films 1919-1921,” *Studies in the 20th Century*, as held in Getty Research Institute, Research Library, Special Collections and Visual Resources, Los Angeles, CA, Hans Richter papers 1929-1968, Folder 13, Typescripts of articles and lectures, Folder 13, 8. See also Richter, “Avant-garde Film in Germany,” unpublished, undated (1948?), as held in Getty Research Institute, Research Library, Special Collections and Visual Resources, Los Angeles, CA, Hans Richter papers 1929-1968, Folder 13, Typescripts of articles and lectures, Folder 13, 1 & 2.

³⁷ Richter, “Step by Step,” 9.

³⁸ Ibid.

³⁹ Ibid. See also O’Konor, *Viking Eggeling 1880-1925: Artist and Film-Maker Life and Work* (Stockholm: Louise O’Konor and the Eggeling Family, 1971).

became the first 'instrument' to test motion."⁴⁰ Expansion and contraction became an important theme that inspired Eggeling and Richter's early scrolls and films.⁴¹

Richter's and Eggeling's films intended to serve a social purpose. In response to the tragedy of the First World War, they sought to uncover a universal language to unite different cultures through abstract unity. Unaware of any fascist implications, they pursued what they believed a noble pursuit. Van Doesburg presented Richter's first film in Paris at the Theatre Michael in 1920.⁴² Eggeling's film *Diagonal-Symphony* first showed in Berlin, November 1923.⁴³ The original and edited versions of *Diagonale-Symphonie* were given to friend and enthusiast young Kiesler, who presented it alongside Richter's, Ruttman's, and Fernand Léger's experimental films at Kiesler's theater exhibitions in Paris and New York in 1925 and 1926.⁴⁴ In 1937, Kiesler received the honor to inscribe a permanent introduction on Eggeling's film as compensation for Kiesler's years of interest and efforts to exhibit and maintain Eggeling's film internationally.⁴⁵ [Fig. 1.14]

⁴⁰ Richter, "Step by Step," 9-10.

⁴¹ Late in 1918, Eggeling drew his first scroll, "Horizontal Vertical Mass," and Richter completed "Prelude." The scrolls were limited to eight or ten transformations. They developed their scrolls into film with the help of the United Film Association (UFA). Transforming a thirty foot long scroll into film proved too difficult, so Richter simplified his strategy. He animated a set of paper squares as they grew and disappeared in well-controlled tempo and rhythm. See Richter, "Avant-garde Film in Germany," 2.

⁴² Adolphe Behne published the first article on their scrolls and films in reaction to Richter and Eggeling's pamphlet *Unviervelle Sprach* in 1920. It was printed in Forst i/L (no copy is in circulation according to Richter though Richter claims there are marks of the text from this pamphlet in *MA* #9 (192) in an article by Eggeling). Van Doesburg likely read Behne's article prior to visiting Eggeling and Richter in December 1920. He published a report on his visit and their work in *De Stijl* May 1921. See Richter, "Step by Step," 13. See also Richter, "Avant-garde Film in Germany," 3.

⁴³ Film director Winfried Basse and Eggeling's girlfriend Erna Niemeyer originally produced Eggeling's film. Eggeling continued to work with Walther Ruttman in 1924 to edit *Diagonale-Symphony* for distribution in theaters. Richter, "Step by Step," 15.

⁴⁴ *Ibid.*

⁴⁵ Kiesler had brought the original copies of Eggeling's works as well as those of Richter's early animation films to the United States in 1926 and held them in his possession. He also owned Walter Ruttman's well-known early advertising film, which he eventually had restored. Hans Richter wrote to him in the 1937 to have these films made available to the MoMA in New York. In 1977, the master print of Léger's *Ballet Mécanique* was found in the home of the widow of Frederick Kiesler as brought to Frederick Kiesler in Vienna in 1924. See Lillian Kiesler, "Frederick Kiesler Biography," 168 & 169. See also Lillian Kiesler, "Frederick Kiesler: In Search of... Quintessence of Cinema, Compiled by Lillian Kiesler, September 1977," A Tribute to Anthology Film Archives' Avant-garde Film Preservation Program An Evening Dedicated to Frederick Kiesler, Museum of Modern Art, New York, October 19, 1977 (Washington D.C.: American Film Institute, 1977) 30. See also letters from Hans Richter to Frederick Kiesler, March

Kiesler exhibited and lectured often on Richter's and Eggeling's films, which he noted were important investigations into the "contraction and expansion" of space.⁴⁶ In Richter's film *Rhythm 21*, the transpiring motion of a series of rectangular shapes, provided a conceptual diagram that informed Kiesler's mobile-flexible designs.⁴⁷ [Fig. 1.15] Additionally in response to Eggeling's work, Kiesler noted:

There is no doubt that the *Symphonie Diagonale* has...an expression of austere beauty that is only inherent to work of nature or art embodying entity of all parts held tenaciously together by its very own power of motion, that makes it *expand and contract, endless in its breath and most concrete in its structure.*⁴⁸

Creating an illusion of spatial depth using a back and forth rhythm, these films simulated Bergson's definition of evolving form as an "elastic canalization...in variable and indeterminate directions"⁴⁹ "a perpetual oscillation"⁵⁰ "a perpetual flux" "drawn out into an endless chain,"⁵¹ which "lets loose the universal becoming. [Fig. 1.16] It is an elusive nothing that creeps between the Ideas [Forms] and creates endless agitation, eternal disquiet."⁵² Bergson reminds us

17, 1937, Briefe R, Mappe 2, and letter from Frederick Kiesler to Mr. John E. Abbott, Museum of Modern Art Film Library 485 Madison Avenue, NYC, April 21, 1937, Briefe A, Mappe 4, as held in the Kiesler Archive, Vienna Archive, Vienna.

⁴⁶Kiesler either visited or knew Eggeling's studio well as described in his 1934 lecture at the Wadsworth Athenaeum. As Kiesler recalled, "Eggeling installed a motion picture camera suspended from the ceiling in his little studio on the top floor of a house near Wittenberg Platz in Berlin. Underneath the suspended ceiling he laid his designs on a table. There, between two glass plates a paper roll twenty feet long and three feet wide bearing the theme-designs of the *Symphonie Diagonale* in the form of a musical fuge was passed in front of the camera. Again and again he partially covered up the designs with lead stencils. Light came from underneath and shot right up around his dark designs into the camera which absorbed them from above. He had to organize his workshop himself with very little means and in his own way to suit his purpose." Frederick Kiesler, "Wadsworth Athenaeum Lecture," unpublished, December 16, 1934, 2, Txt 06 Man/Typ Box, Man/Typ Various V-Z Folder, Kiesler Archive, Vienna Archive, Vienna.

⁴⁷ In Kiesler's lecture he cited, "rhythm by Hans Richter is a studio experiment to test the illusion of depth in motion picture presentation. Richter was a friend [and pupil] of Eggeling and belonged to the *de Stijl* group in Berlin, and Paris of which I am today proud to have been one of the founders, and which started, as you know already, in 1916 a similar research of fundamentals in architecture, painting, sculpture, music and literature. The limitation of spaces expansion and contraction by the motion picture frame is studied." Kiesler, "Wadsworth Athenaeum Lecture," 4. Kiesler was not a founding member of *de Stijl* despite what he liked to suggest.

⁴⁸ Kiesler, "Wadsworth Athenaeum Lecture," 3 & 4; my italics.

⁴⁹ Henri Bergson, *L'Évolution créatrice* (Paris: Alcan, 1907); English translation *Creative Evolution*, tr. Arthur Mitchell (New York: Henry Holt and Company, 1911; reprinted New York: Dover Publications, 1998), 255.

⁵⁰ Ibid. 317.

⁵¹ Ibid. 319.

⁵² Ibid. 317.

becoming is an indeterminate process, and Kiesler, similarly to Richter and Eggeling, searched to create indeterminate elastic forms that could expand and contract in endless articulation.

Richter and Eggeling employed film to demonstrate endless spatio-temporal qualities as inspired by Bergson, which Kiesler attempted to incorporate into architecture. Informed by Richter and Eggeling's experimental animations, Kiesler hoped to derive endlessness through the contraction and expansion of moving elements held together by structural motion. Between a series of built-up forms, Kiesler hoped to form the perception of endless spatial oscillations. His *Endless Theater* was his first attempt to develop the *Endless* as not only a speculative proposition, but also an experimental production relevant to contemporary building practice. Kiesler invented the *Endless* as a provocation to built form which he developed through his architectural research over the course of three major International theater exhibitions he coordinated in Vienna, Paris, and New York from 1924 to 1926.

New Theater Techniques

Influenced by *G* and *De Stijl* magazines, their format, participants, and content, in 1924 Kiesler coordinated the International Exhibition of New Theater Technique, a part of the International Music and Theater Festival of the city of Vienna. [Fig. 1.17] Kiesler was appointed architect and artistic director for the exhibition likely due to his international contacts. He presented extensive study of contemporary stage techniques by avant-garde theater designers in Russia, Austria, France, Germany, and Italy, among others. He designed the catalogue, exhibition stands, and a performance stage, in addition to coordinating a series of compelling lecture, theater, and film events.⁵³ The 1924 exhibition demonstrated contemporary theater challenging static stage traditions with avant-garde tenacity and socially defiant intent.

⁵³ See the exhibition catalogue: *Internationale Ausstellung Neuer Theatertechnik Konzerthaus Unter Mitwirkung Der Gessellschaft Zur Foerderung Moderner Kunst, Der Stadt Wien 1924*, umschlagu, typographie: Friedrich Kiesler, redaction vom verlag: Walter Neurath (Wien: Verlag Wurthle & Sohn Nachfolger, September 19, 1924) Friedrich Kiesler completed the design (envelop, typography) and Walter Neurath edited the catalogue for the publisher.

Changes invoked by industry and war strongly influenced European theater by the 1920s.⁵⁴ Avant-garde artists with revolutionary agendas supported political change through theater. Theater was one of the few mediums at the time that could reach a broad audience. Developments in modern theater however, varied throughout Europe. The success and failure of war created uneven political and economic situations, which supported diverse theatrical interests.

In England and France, during the war there was little financial support for theater. But afterwards, theatrical trusts generated substantial profits by exploiting strong nationalist spirit and patriotism. Theater showed predominantly the classics that featured the historical and cultural achievements of the allies. Only occasional modern plays in England and France were presented, despite revolutionary changes throughout the rest of Europe.

Innovative Constructivist Theater developed in Russia in response to the Bolshevik revolution and forming communist agendas. Constructivists hoped to merge actor, spectator, theater, and stage into one event that would burst out onto the street in mass festivals. They proposed devices that could move, shift, and evolve in coordination with action on stage and off in rhythm with inspiring and liberating action. Vsevolod Meyerhold became the leader of this movement. His plays simulated the spirit of mass meetings taking place in Russia.

New forms of theater emerged throughout Europe in response to the dynamism of war, modern industry and revolution. Besides Constructivism in Russia, Expressionism developed in Germany surrounding the Berlin Sturm Group as published in *Der Sturm* under leadership of Herwarth Walden.⁵⁵ By 1920, Expressionist Theater evolved from a group of young insurrectionists into a movement that sought the destruction of the intolerable systems of society. Expressionism, similar to Italian Futurism, developed plastic art forms and music of beauty with intense dynamism and speed that expressed qualities emerging in modern everyday life. Unlike the Futurists however, Expressionists prioritized human body and spirit over industrial progress

⁵⁴ For a history of theater from the 1920s see Huntly Carter, *The New Spirit in the Russian Theatre 1917-28* (New York: Brentano's LTD., 1929) reprinted (New York: Arno Press, 1970); see also Huntly Carter, *The New Spirit in the European Theater 1914-1924* (London: Ernest Benn Limited, 1925).

⁵⁵ For a history of Expressionist Theater, see David F Kuhns, *German Expressionist Theater: the Actor and the Stage* (Cambridge; New York: Cambridge University Press, 1997) 75-77.

and its machines, while the Futurists under Marinetti embraced humanity as machines. Enrico Prampolini advanced Futurist Theater with his mechanical ballets and illusory scenic atmospheres, while Kurt Schwitters, August Stramm, Lothar Schreyer, and Walden expanded Expressionist Theater to incorporate words, sounds, color and movement to motivate spectators to feel human reactions.

The Vienna Exhibition

Challenged to incorporate the large array of post-war developments in modern European theater at the 1924 New Theater Technique exhibition in Vienna, Kiesler elaborated a rich and unique venue and catalogue for the event. Texts by Kiesler, Fernand Léger, Walden, Hanz Fritz, William Waruer, Wilhelm Treichlinger, Marinetti, Schwitters, Josef Trubswasser, Rudolf Blumner, Luigi Russolo, B.F. Doblin, K.A. Wittfogel, Schreyer, Iwan Goll, Walter Mehring, Herman Kloppers, Prampolini and Fulop Miller, were featured alongside works by Léger, Komisarewski, Magazin, Meyerhold, Man Ray, Oskar Laske, Ludwig Hirschfeld-Mack, Cavalcanti, George Grosz, Gert Caden, Bolger-Schmidt, Oskar Schlemmer, Prampolini, Totengraber, Kurt Schmidt, Vlastislav Hofman, Feuerstein, Marc Chagall, Jean Hugo, Rudolf Honigsfeld, Wesnin, and Forregger. Represented were predominantly theater designs, films, images, and ideas by Expressionists, Futurists, Constructivists, and Dadaists, however classical and modern music by Beethoven, Mozart, Strauss, Wagner, and Schonberg among others were incorporated into the festival through live performances daily throughout Vienna from September 22 through October 15.⁵⁶

The texts published in the catalogue provided a rich framework of ideas surrounding modern theater in Europe by the 1920s. These texts were juxtaposed with images by the authors and other relevant works. The format of text and image was systematic, and similar to the characteristic juxtaposition of G. Texts shifted between vertical and horizontal display and incorporated images and marginalia to weave carefully together a vast framework of ideas. [Fig. 1.18] A witty introspective play by Schwitters for example, on the content versus public reception

⁵⁶ For a complete program of events see the exhibition catalogue: *Internationale Ausstellung Neuer Theatertechnik*, 88 & 89.

of his *Merzbühne*, crossed boldly through several pages and texts.⁵⁷ Kiesler collaged Schwitters' text against Marinetti's essay, "*Wir Erfinden Das Anti-psychologische Abstrakte Theater* [We Invent Anti-psychological Abstract Theater]," and Trubswasser's discussion and images of "*Geigenbau* [Violin Making]" (its innovative shape and subsequent mass-production). In addition, Kiesler presented Schwitters' text alongside expressionist "speak artist" Rudolf Blumner's essay on "*Die Sprechkunst*" and Futurist Luigi Russolo's study on spectator acclimatization to modern irritability titled the "*Die Kunst Der Geräusche* [Art of Noise]". These essays conjoined to form a modern cultural discussion on formal production, theater, art and language.

There were many texts that preceded Schwitters' article in the catalogue. Léger wrote on the impact of light, color, and film on theater.⁵⁸ Walden analyzed the public's interest to view famous actors in theater over great artistic expression. Architect Hans Fritz wrote on pliant boundless stage interaction achieved through mathematical, systematic cubic arrangements. William Wauer presented the dramatic art of human expression in his article titled "*Der Schauspieler* [The Actors]". In addition, Wilhelm Treichlinger and Fritz Rosenbaum's included an essay "*Theaterprojekt*" that featured a minimal stage design with actors creating space through their own rhythmic action.⁵⁹ These essays described modern theater and its attempt to choreograph human interaction. Modern theater provided extensive opportunity for artistic expression using color, light, sound, and rhythm. Modern stage enhanced the visual effects that surround a series of orchestrated human actions. Actors moved habitually on stage in controlled response to their surrounding perceptions of the environment.

Kiesler emphasized texts chosen predominantly by Expressionists and Futurists. These texts were highly critical in their analysis of theater. Kiesler presented these texts alongside his own stage designs for the R.U.R. (W.U.R.) and a collage image of his *Emperor Jones* stage

⁵⁷ Kurt Schwitters und Franz Rolan, "*Stegreiftheater Merz*," in *Internationale Ausstellung Neuer Theatertechnik*, 26 to 38.

⁵⁸ Fernand Léger, "*Das Schauspiel Licht, Farbe, Film*," in *Internationale Ausstellung Neuer Theatertechnik*, 6 to 8.

⁵⁹ Wilhelm Treichlinger and Fritz Rosenbaum, "*Theaterprojekt*" in *Internationale Ausstellung Neuer Theatertechnik*, 18 & 19.

sets.⁶⁰ [Fig. 1.19] Kiesler featured his stage design for *Emperor Jones* as a series of animate still images formatted similarly to Richter's *Rhythmus 23* published in *1G*, and emphasized his stage designs as rhythmic unfolding constructions contracting and expanding through time. [Fig. 1.20] This was his first attempt to describe architectural space with animate techniques.

Kiesler exhibited other experimental animation studies throughout his catalogue. Following images of his own stage designs and Schwitters' expressionist tale of the *Merzbühne*, the catalogue featured images and text by Fernand Léger—his "*Ballet Mecanique*".⁶¹ Léger's animation film (presented first by Kiesler at the 1924 exhibition) epitomized ideas wrestled by many modern authors and artists. Providing a series of rhythmic images set to three temporal strategies—speeds—the film created flat moving surfaces of varied fragments of bodies and machines devoid of perspective that persisted to intensities too distracting for the spectators' eye and interest. Oscillating from slow to fast to slow motion, tension increased with speed. Subject to incessant rhythmic projection, innovative spatial contiguities emerged from the series of fixed still-images. Automatic arithmetical projection—6 images a second for 30 seconds, 3 images a second for 20 seconds, 10 images a second for 15 seconds—endlessly repeated to generate continuously evolving visual juxtapositions with innovative imaginative forms. The Vienna theater exhibit readily explored ideas of the body fused with mechanical rhythm. As Kiesler presented throughout the catalogue and exhibition, the new industrialized human condition implored theaters to have an equally provocative and innovative spatial organization. Revolutionary theater appropriate to the political and industrial challenges of the early 20th century supported new spatial resolve.

Die Raumbühne

Kiesler's essay "*Debacle Des Theaters Die Gesetze Der G.-K.-Bühne*" published in his 1924 Vienna New Theater Technique exhibition catalogue, defined the laws that could achieve

⁶⁰ Friedrich Kiesler, "*De La Nature Morte Vivante*," in *Internationale Ausstellung Neuer Theatertechnik*, 20 & 21, 24 & 25.

⁶¹ Fernand Leger, "*Ballet Mecanique: Film de Fernand Leger et Dudley Murphy Synchronisme Musical de Georges Antheil*," in *Internationale Ausstellung Neuer Theatertechnik*, 39 & 40, 42.

the tension, rhythm, and interplay necessary for modern theater.⁶² Not limited to perspective views or frontal effects created by the optically rigid proscenium theater, Kiesler contended, “the new spirit bursts the stage, resolving it into space to meet the demands of the action. It invents the Space Stage [*Raumbühne*], which is not merely a priori space, but also appears as space.”⁶³ Action set before an illusionary backdrop would no longer define theatrical space. Instead, change of position and posture between actors and spectators in correlation to a total environment of speed and motion would create the spatial and plastic tension of modern times. Speech and action would be organic and evolve with the scenery in vital composition with histrionic intensity. For Kiesler, motion was the only space-element that could make a composition vital, and he provided the mathematical proof for his scheme.⁶⁴ [Fig. 1.21, Fig. 1.22] Stage construction would consist of a sphere, divided by cubic space of three dimensions, plus color divided by animate and inanimate material plus light and sound, times the differential of motion over time, integrated over the upper and lower limits of color, light, sound and material. Kiesler described the spatial integration of movement in theater using calculus. Color, light, sound, and material (both animate and inanimate) continuously change over time relative to motion within a spherical *Raumbühne* of cubic proportions.

Kiesler proposed two calculable solutions to achieve the *Raumbühne* in 1924. The “G.-K.-Bühne” was the modern “Peep-Show” stage; it was similar to Kiesler’s *Emperor Jones* stage sets. On the modern Peep-Show stage, the ceiling, walls, and floor of the picture-stage inclined to create as Kiesler described a “four-sided funnel” perspective that opened towards the

⁶² Friedrich Kiesler, “*Debacle Des Theaters Die Gesetze Der G.-K.-Bühne*,” in *Internationale Ausstellung Neuer Theatertechnik*, 43 to 58.

⁶³ In the original German text: “*Der neue Wille sprengt die die Bildühne, um sie in Raum aufzulösen, wie es das Spiel verlangt. Er schafft die Raumbühne, die nicht nur a prior Rau mist, sondern auch als Raum erscheint.*” See Kiesler, “*Debacle Des Theaters*,” in *Internationale Ausstellung Neuer Theatertechnik*, 53; English translation is from Friedrich Kiesler, “The Debacle of Modern Theater,” in the *International Theatre Exposition New York 1926*, 18.

⁶⁴ In original German text: “*Es gibt nur ein Raum-Hauptelement der G.-K.-Bühne: Die Bewegung.*” See Friedrich Kiesler, “*Debacle Des Theaters Die Gesetze Der G.-K.-Bühne*,” *Internationale Ausstellung Neuer Theatertechnik Konzerthaus Unter Mitwirkung Der Gessellschaft Zur Foerderung Moderner Kunst*, 57. English translation is from the catalogue for the *International Theatre Exposition New York 1926*, 22. Kiesler eliminated reference in the quote to the G.-K.-Bühne or “Peep-Show” stage in the English translation. For the German mathematical equation see *Internationale Ausstellung Neuer Theatertechnik*, 58. For the English mathematical equation see the catalogue for the *International Theatre Exposition New York 1926*, 23.

audience. The picture-stage was no longer a flat background, but a space without decoration or backdrop. The Peep-Show stage supported a spherical performance space dependant not on painted scenery but the play itself, with all its sound, structure, objects, stage mechanisms, and light. The performance would be orchestral and move continuously without interruption.

Kiesler constructed another solution to the *Raumbühne*, his full-scale Space Stage at the Vienna exhibition. Kiesler conceived the *Raumbühne* or Space Stage as a spiral ramp circulating around a central platform that gave structure for dynamic events to unfold. Actors moved up and down the ramp in syncopated rhythm. [Fig. 1.23] The Space Stage performed to merge actors and spectators on a spiral ramp and circular stage almost automatically in continuous flow. As presented in the Concert House and used for several theater and lecture events, the Space Stage constructed of steel and wood provided a platform to engage theater-in-the-round. Kiesler built the Space Stage with seating surrounding three sides. The existing Concert House stage remained unused behind the Space Stage on the fourth side. Ideally, there would have been seating all around, and the audience would circumnavigate the Space Stage to combine with actors on stage.

Kiesler's Space Stage structure performed similarly to constructivist designs. Art and theater historians Linda Phillips, Barbara Lesák, and R.L. Held have all concurred that Kiesler's Space Stage appeared similar to Vladimir Tatlin's *Monument to the Third International* of 1920.⁶⁵ Kiesler's *Raumbühne* and Tatlin's *Tower* incorporated the dynamic movement, mechanization, and mass culture of the times spiraling out to engage lively atmospheric events. [Fig. 1.24] Celebrating Constructivism, Kiesler devoted nine pages at the conclusion of his 1924 theater exhibition catalogue to Miller's essay on "The new Russian Theater."⁶⁶ [Fig. 1.25] The article featured images of stage sets by Vesnin and Meyerhold including *Der Mann der Donnerstag war* and *The Maganimous Cuckold*. In addition, Kiesler included models of Vesnin and Meyerhold's stage designs at the Vienna exhibition. [Fig. 1.26]

⁶⁵ See Lisa Phillips, "An Environmental Artist," in *Frederick Kiesler*, ed. Lisa Phillips (New York: W.W. Norton & Co. 1989) 109. See also Barbara Lesák, *Die Kulisse explodiert: Friedrich Kieslers Theaterexperimente und Architekturprojekte 1923-1925* (Wien: Locker Verlag, 1988) and R.L. Held in *Endless Innovations*, 34.

⁶⁶ *Internationale Ausstellung Neuer Theatertechnik*, 68 to 80.

By 1922, prior to Kiesler's invention of the *Raumbühne*, Meyerhold created fluid action onstage using complicated freestanding devices. Meyerhold and constructivist artist Liubov Popova removed the use of walls onstage. Stairs, doors, and landings provided space for practical performance, while the actors circulated in rhythmic succession about a lattice frame structure of rotating wheels and moving devices. Stage elements could move about as needed in response to changing requirements of the play. Actors dialectically engaged staged equipment. Their bodies tilted, moved, and turned in response to repositionable stage machinery.

Meyerhold trained his actors to move habitually, autonomically with precision and agility. Meyerhold's theater of Biomechanics featured in *The Manganimous Cuckold* revealed an art to the sculpting and training of bodily forms that responded to industrialization, mass labor, and political control.⁶⁷ [Fig. 1.27] Meyerhold appealed to automatist sensibility of working and living in a daily world of revolutionary machine technology. Automation embodied the contemporary struggle of modern culture as people learned to adapt to an evolving mechanized world. Similar as Karl Marx and Walter Benjamin have suggested, bodies naturally gear their movements with fluid motion to their technological surroundings.⁶⁸ In the face of industry, the body becomes an automaton.

Seeking path to popular theater, Meyerhold engaged the automatism of everyday life. He popularized Friedrich Winslow Taylor's temporal strategies to analyze and control the body-in-motion, and dramatized Taylorism in an art of efficient rhythm and tempo. Actors moved in continuity of habit with their evolving environment as they inspired and trained spectators to the new rhythms of modern industry and the promise of collective power.

Kiesler's *Raumbühne* calculably employed similar Constructivist devices to incite mass audience participation. The spiral ramp engaged the body to move automatically with or against gravity in spherical motion. It was open on all sides and coiled systematically within the space of

⁶⁷ See *Internationale Ausstellung Neuer Theater Technik*, 80. See also Konstantin Rudnitsky, *Russian and Soviet Theater 1905-1932*, ed. Dr. Lesley Milne, tr. Roxane Permar (New York: Harry N. Abrams, Inc., 1988) 93. See also Edward Braun, *The Theatre of Meyerhold: Revolution on the Modern Stage* (New York: Drama Book Specialists, 1979) 174.

⁶⁸ See Walter Benjamin, "On Some Motifs in Baudelaire," in *Walter Benjamin: Selected Writings Volume 4: 1938-1940*, ed. Michael W. Jennings (Cambridge: Harvard University Press, 2003) 328.

the audience. The circular platform opened to all vantage points, and provided flat space for the actors to establish rhythm and free play. Their movements performed the illusion of a spherical space similar to Gert Cadens' design for the "*Excentik Operpoid*" Kiesler featured alongside his "*Debacles Des Theater*" essay in the Vienna exhibition catalogue.⁶⁹ [Fig. 1.28] Caden's design incorporated a spherical shaped theatrical performance area in elliptical perspective with spiral scaffolding central to its structure. [Fig. 1.29]

Spiraling movement for constructivist performances suggested a spherical or elliptical field for theatrical action. Used for several exemplary theater productions at the exhibition, the Space Stage arguably demonstrated the first Constructivist device set free of the traditional stage within a theatrical context. Surrounded at times with white curtains for projecting images during staged events, the *Raumbühne* engaged innovative modern media. It provided a rich framework for unique performance, and although an innovative design, it received mixed reviews.⁷⁰

Plagiarism

During opening events at the festival, well-known psychiatrist and theorist, Dr. Jacob Levi Moreno accused Kiesler of plagiarism. "I announce, in public, Mr. Friedrich Kiesler is a plagiarist and a scoundrel," Moreno exclaimed.⁷¹ A debate had begun in the newspapers prior to the opening of the exhibition, over the originality of Kiesler's *Raumbühne*.⁷² Moreno believed he had invented the first theater-in-the-round for modern stage performance and that Kiesler stole the idea from Moreno. Moreno fervently contested Kiesler's full-scale Space Stage at the festival, and the police arrested Moreno for creating a disturbance. Moreno continued to confront Kiesler in the

⁶⁹ *Internationale Ausstellung Neuer Theatertechnik*, 44.

⁷⁰ Kiesler was accused of plagiarism early in his career for copying the theater designs of Dr. Jacob Moreno. These allegations were successfully disputed in court. See R.L. Held, *Endless Innovations*, 30-36. See also Lesák, *Die Kulisse explodiert*, 112-120.

⁷¹ For English translation of quote from *Neues Wiener Journal*, October 3, 1924, see R.L. Held, *Endless Innovations*, 34.

⁷² See Rudolf Hönigsfeld, *Offener Brief an die Redaktion "Der Tag"*, *Der Tag* (Wien) v. 11. September 1924, found in *Die Kulisse explodiert, Texte zur Raumbühne, Forschungsprojekt Dr. Barbara Lesák*, original research by Barbara Lesák for *Die Kulisse explodiert: Friedrich Kieslers Theaterexperimente und Architekturprojekte 1923-1925*, as held in the Kiesler Archive, Vienna. Kiesler had constructed his *Raumbühne* during the summer prior to the festival exhibition.

newspapers for several weeks, however. Numerous articles and cartoon characterizations at the time debated the accusations in the press.⁷³ [Fig. 1.30]

The controversy between Kiesler and Moreno surrounded comparison between Dr. Moreno's *Stegreiftheater* and Kiesler's *Raumbühne*. Moreno lectured on the psychology of children's theater in Vienna at the time. He was interested in the tactics of storytelling to a large group of children, and relished being at the center of many concentric circles of young people.⁷⁴ He taught children to join-in "spontaneously" and add verbally to his stories as they developed. Moreno took this didactic storytelling strategy as the basis for his contribution to modern stage design. Moreno had architect Rudolf Hönigsfeld illustrate his vision for a *Theater Ohne Zuschauer—Das Stegreiftheater* in 1923.⁷⁵ Hönigsfeld's "Theater without Spectators – the Theater of Spontaneity" had a circular stage circumscribed by concentric rows of seating. The newspapers published the illustration in 1923.⁷⁶ In addition, Moreno included the illustration with his studies on the psychology of theater in his book *Das Stegreiftheater* printed in January 1924, and a revised version in 1947.⁷⁷ [Fig. 1.31]

Kiesler knew Moreno's design well. He had attended Moreno's lectures on the "Theater of Spontaneity" in Vienna, and published Hönigsfeld's illustration of Moreno's theater in his 1924 *New Theater Technique* catalogue.⁷⁸ [Fig. 1.32] Kiesler also exhibited Hönigsfeld's illustration of *Das Stegreiftheater* at the festival.⁷⁹ Kiesler was interested in Moreno's work, but denied he was

⁷³ See R.L. Held, *Endless Innovations*, 30-36. See also Lesák, *Die Kulisse explodiert*, 112-120. See also "Plagiatstreit", *Die Kulisse explodiert*, Texte zur *Raumbühne*, *Forschungsprojekt Dr. Barbara Lesák*, original research by Barbara Lesák for *Die Kulisse explodiert: Friedrich Kieslers Theaterexperimente und Architekturprojekte 1923-1925*, as held in the Kiesler Archive, Vienna. Barbara Lesák's research includes articles and notes on the reception of the *Raumbühne*.

⁷⁴ See J. L. Moreno, *The Theatre of Spontaneity* (New York: Beacon House, 1947) 3. As Moreno described, "the most important part of the story was that I was sitting at the foot of a tree...It was not as much what I told them, the tale itself, it was the act, the atmosphere of mystery, the paradox, the unreal becoming real. I was in the center, often I moved up from the foot of the tree and sat higher on a branch: the children formed a circle, a second behind the first, a third behind the second, many concentric circles." See research by R.L. Held, *Endless Innovations*, 32 & 33.

⁷⁵ R.L. Held, *Endless Innovations*, 32 & 33.

⁷⁶ J. L. Moreno, *Das Stegreiftheater* (Potsdam, 1923) tafel 1. See research by R.L. Held, *Endless Innovations*, 32 & 33.

⁷⁷ R.L. Held, *Endless Innovations*, 32 & 33

⁷⁸ *Ibid.*

⁷⁹ *Ibid.* 32.

a plagiarist. To clear his name, Kiesler filed suit against Moreno.⁸⁰ Kiesler received strong public support from Joseph Hoffman, Fritz, Léger, Prampolini, Karl Martin, Albrecht Blum and Oscar Fontana—who all assured the originality of Kiesler's work.⁸¹ Kiesler cleared his name during the trial.

Kiesler's *Raumbühne* and Moreno's Theater of Spontaneity if formally similar performed radically different culturally, politically, and spatially. Kiesler's theater although centralized, maintained a spiral ramp that extended out into the space of the audience. Movement flowed in multiple directions. Implied differences between the space of the theater, the seating area, the orchestra pit, and stage were diffuse. Moreno instead, created a centralized theater with clear hierarchy, where the seated areas radiated out symmetrically and evenly under a domed roof. Kiesler's stage created continuity and inclusivity, and attempted to breakdown hierarchy and social structure between actors and spectators in mass assembly. Moreno's stage created a controlled pedagogical environment for children to participate within an established hierarchical social system. What the two theaters had in common was a central stage, and the intention to produce spontaneous communication among participants within a spherical spatial condition.

Moreno's claim that he designed the first theater-in-the-round for the modern play instead of Kiesler missed the relevant contribution both he and Kiesler made to theater design at the time. Kiesler and Moreno were among many stage designers, artists, and architects contributing to modern theater. Their contributions surrounded the meaningful elaboration of spatial ideas relevant to modern theater practices. Their addition to theater-in-the-round was part of a rich history of theater morphology that extended back at least to antiquity. Their interest to encourage actor and spectator interaction on and off stage engaged ideas present in the 17th century.⁸²

⁸⁰ To prove his case Moreno constructed his own version of the *Raumbühne* for his "Living Newspapers" performance in Vienna around October 13, 1924. Moreno's stage appeared similar to Kiesler's *Raumbühne*. Moreno published his version of the first theater-in-the-round for modern play on the front cover of his revised English edition of *Theater of Spontaneity* in 1947. Moreno's revised stage appeared similar to Kiesler's *Raumbühne*. Ibid. 32.

⁸¹ Ibid. 35.

⁸² For a history of theater-in-the-round see Irving Pichel, *Modern Theaters* (New York: Harcourt, Brace and Company 1925). For a history of modern theater including illustrations of the first interactive and spherical stage designs including 17th Century interactive theater designs of *Danza A Cavallo's Teatro Farnese, Parma 1728* and *Theatro Ducale in Firenze, 1616*, see Kevin MacGowan, *The Theater of Tomorrow* (New York: Boni and Liveright, 1921).

Moreno and Kiesler responded to changes in theater historically and internationally, and their ideas were not unique at the time. Their work appeared similar to American theater designer Norman Bel Geddes' concentric, spiral, and spherical spatial schemes of 1914 and 1923.⁸³ [Fig. 1.33] Geddes in America, and Moreno and Kiesler in Vienna were all well-informed by ideas prefigured in the modern stage studies of European theorists Adolphe Appia and Gordon Craig at the turn of the 20th century.

Appia and Craig were the fathers of modern theater design. Appia created stages that relied on platforms, stairs, and simple plastic elements freed from illusory painted backdrops for actors and lighting to respond with resistance. Appia achieved synthesis between time and space by coordinating the rhythms of the living body and dynamic lighting effects, to the surrounding scenic atmosphere. Craig wanted to do away with actors altogether—to allow costumes if not marionettes to serve the composer—to enable complete control over the entire theatrical event.

Prampolini responded to Appia and Craig's contribution to theater in Kiesler's 1924 exhibition catalogue. In his article "L'Atmosfera Senica Futursita," Prampolini commended the diminishing role of the actor in Appia and Craig's modern works. Craig had reduced the actor to a "spot of color" an "object," while Appia had established a "hierarchy between *author, actor, and space*."⁸⁴ Appia and Craig hoped to synthesize the actor with the music and the stage to advance the original intentions of the *Gesamtkunstwerk*, which Prampolini elaborated through his own work as an innovative polydimensional scenic-space.

In accord with Richard Wagner's revolutionary concept of the *Gesamtkunstwerk* for modern opera, Prampolini envisioned unity between vision and sound in time and space. Wagner

⁸³Geddes proposal for Dante's Divine Comedy at Madison Square Garden in 1923 created an elaborate topographic spatial platform that provided ample ramps and stairs that spiral alongside towering scenery for actors to circulate on-stage without traditional proscenium devices. Built on hydraulics the stage could sink below the auditorium for scene changes eliminating the need for large fly space, wings, and tower. The Germans formatively developed complex staging devices. Herr Lautenschlager of Germany received credit for inventing the first revolving stage. Reinhardt elaborated Lautenschlager's technique to create seven scenes turning on one circular table. Sliding stages were invented to allow sets to move side-by-side. See Kevin MacGowan, *The Theater of Tomorrow*.

⁸⁴ Enrico Prampolini, "L'Atmosfera Scenica Futurista," in "Internationale Ausstellung Neuer Theatertechnik, 74. English translation Enrico Prampolini, "The Magnetic Theatre and The Futuristic Scenic Atmosphere," *Little Review: The International Theatre Exposition New York 1926, Special Theater Number, February 27 to March 15*, Organized by Jane Heap and Friedrich Kiesler, Winter, 1926, 18; Italics in the original English translation.

had originally conceived the *Gesamtkunstwerk* to unify poetry of art and music with sonic voice. Wagner was one among many including Goethe, Gluck and Shelling who proposed the synthesis of poetry and music on stage.⁸⁵ For Appia and Craig, however, Wagner had failed to incorporate the stage into a *Gesamtkunstwerk*; he instead maintained conventional scenographic techniques of the proscenium stage that marked separation between actor, spectator, stage, image, and intent. Prampolini perceived the *Gesamtkunstwerk* in theater required more synthetic resolve. He elaborated Appia and Craig's interpretation of Wagner's call for "The Art-Work of the Future" to the speed of modern industry, war, and machines.

Synthetic Theater

Marinetti and Settinelli were the first Italian futurists to promote synthetic theater, which they proposed in their manifestos "The Variety Theater" in 1913, and "The Futurist Synthetic Theater" in 1915. Incorporating speed, immediacy, and unbroken contact between actors and the crowd, Marinetti and Settinelli argued for "synthesis of everything that humanity ha[d]...up to now refined in its nerves."⁸⁶ Futurist Theater would be electric, enriched, and unique—combining technology, arts, and the use of cinema to create incalculable visions and spectacles. Compressed into a few minutes of intensity and action, Futurist Theater would create indeterminate illusory effects. Marinetti hoped to produce, "*a labyrinth of sensations imprinted on the most exacerbated originality and combined in unpredictable ways.*"⁸⁷

Prampolini advanced Marinetti's and Settinelli's call for Futurist Theater in his 1915 manifesto "Futurist Scenography."⁸⁸ He argued for a "colourless electromechanical architectural

⁸⁵ See Jack M. Stein, *Richard Wagner & The Synthesis of the Arts* (Detroit: Wayne State University Press, 1960).

⁸⁶ Filippo Marinetti, "The Variety Theater: September 29, 1913," in *Marinetti: Selected Writings*, ed. and tr. by R.W. Flint (New York: Farrar, Straus and Giroux: 1972) 117.

⁸⁷ Filippo Marinetti, Emilio Settinelli, Bruno Corra, "*Futurist Theory and Invention, January 11, 1915*" in *Marinetti: Selected Writings*, ed. and tr. by R.W. Flint (New York: Farrar, Straus and Giroux: 1972) 128. (emphasis in original).

⁸⁸ Enrico Prampolini, "The Futurist Stage (Manifesto) 1915," in *The Documents of 20th –Century Art: Futurist Manifestos Edited and with an Introduction by Umberto Apollonio*, ed. Robert Motherwell and Bernard Karpel, tr. Robert Brain, R.W. Flint, J.C. Higgitt, Caroline Tisdall (New York: Viking Press, 1970) 201. From 1919 to 1923 Prampolini demonstrated and developed his unique theory of futuristic scenic stage design for theater productions in Rome and Prague.

structure, enlivened by chromatic emanations from a source of light...in accordance with the spirit of action on stage." Prampolini demanded a dynamic stage:

The luminous radiation of these sheaves and walls of coloured lights and the dynamic combinations will give beautiful effects of interpenetration and intersection of light and shade. It will give birth to forlorn voids and exultant, almost corporeal, blocks of light. Additions, unreal clashes, and exuberance of sensations as well as the dynamic architectural structures on the stage, which will move, letting loose metallic arms and overturning the sculptural planes, together with fundamentally new and modern noises—all these will heighten the intensity and vitality of the stage action. On a stage lit in such a way, actors will produce unforeseen dynamic effects.⁸⁹

The futurist stage became a modern stage appropriate to the unpredictable dynamism of contemporary life. Similar to Appia—it used color, light, and rhythm to create intense atmosphere, but unlike Appia, Craig, and Wagner—it conflated man and machine in automatist fantasy. The body was no longer the only living plastic art. The stage became a living organism or machine. Actors and spectators became constructs in a field of new vital technological structures. "Let us create the stage," "Let us reverse the roles," "instead of the illuminated stage," Prampolini suggested, "*let us create the stage that illuminates.*"⁹⁰

Prampolini wrote the guidelines for his new stage of illumination in his 1924 essay, "The Magnetic Theater and the Futuristic Scenic Atmosphere." Kiesler published Italian excerpts of Prampolini's essay in the Vienna 1924 exhibition catalogue as well as the complete English translation in the *Little Review* magazine, 1926. In his essay, Prampolini described a form of theater that incorporated the body within its surrounding environment to create living space. As Prampolini wrote:

we have proclaimed this scenic unity by interpenetrating the human element and the environmental element in a living scenic synthesis of theatrical action. The theater and futuristic art are therefore the consequent projection of the world of the mind, moving rhythmically in scenic space. ...[The] "sphere of action in the futuristic scenic technique desires: ...SYNTHESIS=PLASTIC=DYNAMIC."...It requires a two-dimensional scenic setting of chromatic elements upon abstract surface, a three-dimensional plastic architecture not of fictitious perspective, but "living plastic reality, a constructive organism."⁹¹

⁸⁹ Ibid.

⁹⁰ Ibid.; emphasis in original.

⁹¹ In Italian see: Enrico Prampolini, "L'Atmosfera Scenica Futurista," in "Internationale Ausstellung Neuer Theatertechnik, 71. See also Enrico Prampolini, "The Magnetic Theatre and the Futuristic Scenic Atmosphere," "Polydimensional Scenic Space," "Electro-dynamic Polydimensional

Prampolini's Futurist theories described an organic architectural language, where the body is coordinated to its environment in spatio-temporal rhythm. This new scenic space of spherical action suggested three-dimensional plastic architecture of chromatic surface. Prampolini described a "poly-dimensional and poly-expressive scenic action" that suggested spherical spatial structure.

However, Prampolini's Futurist Theater aimed to differ however from the Constructivist stage. Modern Russian and German theater strove as Prampolini argued to create the perfect technical mechanism of the traditional stage. Meyerhold and Vesin's devices for example, remained on stage set behind a scenic-arc or frame. Instead, he argued, innovative "futuristic polydimensional scenic-space" created through "spheric expansion of plastic planes, moving rhythmically in space"⁹² would create "ELECTRO-DYNAMIC POLYDIMENSIONAL ARCHITECTURE OF LUMINOUS PLASTIC ELEMENTS."⁹³ Polydimensional scenic space would be set-free of the traditional stage with its flat horizontal and vertical platforms, walls, and frames to create simultaneous interpenetration of infinite visual and emotional angles of scenic action. Unlike Prampolini, Kiesler however did not oppose Constructivist Theater but conflated the mass spirit and structures of Constructivist stage design with the spatial freedom of Futurist scenic techniques. Kiesler's *Raumbühne* synthesized mass audiences and spectators within a freestanding theater that merged actor and spectator into one scenic atmosphere. In the modern theater, actors served a new role. They performed as a space-forming component on the stage—

Architecture of Luminous Plastic Elements Moving in the Center of the Theatrical Hollow," and "Polyexpressive and Magnetic Theatre," draft essays combined together in English, as held in Little Review (Chicago, Ill.) Records, 1914-1964 UWM Manuscript Collection 1, University Manuscripts Collection, Golda Meir Library, University of Wisconsin-Milwaukee, General Files, Enrico Prampolini, Box 8, Folder 47, 3. See also in English: Enrico Prampolini, "The Magnetic Theatre and The Futuristic Scenic Atmosphere," *Little Review: The International Theatre Exposition*, 103; emphasis in original.

⁹² See Prampolini, "The Magnetic Theatre and the Futuristic Scenic Atmosphere," draft essays as held in Little Review (Chicago, Ill.) Records, 5. See also Prampolini, "The Magnetic Theatre and The Futuristic Scenic Atmosphere," *Little Review: The International Theatre Exposition*, 104.

⁹³ See Prampolini, "The Magnetic Theatre and the Futuristic Scenic Atmosphere," draft essays as held in Little Review (Chicago, Ill.) Records, 6. See also Prampolini, "The Magnetic Theatre and The Futuristic Scenic Atmosphere," *Little Review: The International Theatre Exposition*, 105; emphasis in original.

as a “dynamic and inter-acting element of expression between the scenic medium and the public,” as Prampolini best explained.⁹⁴

Synthetic theater interconnected actors, public, environment, colored lights, sound, and voice. Prampolini outlined the specific form and structure as a Magnetic Theater where,

a mass of plastic constructions in action which rises from the centre of the theatrical hollow...first on a square, movable platform, standing on an elevator. On this in turn is erected a moving, rolling platform going in the opposite direction...To these plastic constructions, ascending, rotating and shifting movement are given...The scenic action of the chromatic light, an essential element of inter-action in creating the scenic personality of space unfolds parallel to the scenic development of these moving constructions. Its function is to give spiritual life to the environment of setting, while measuring time in scenic space. This chromatic ladder will be made with apparatus of projection, refraction and diffusion.⁹⁵

Polydimensional futurist scenic space comprised new ascending, rotating, and shifting theater centrally staged that created spherical expansion among intense projection that fused actor, spectator, scenery, and play within a dynamic illusory atmosphere. [Fig. 1.34] It was a four dimensional setting, where time was introduced as a rhythmic movement—a dynamic element necessary to simultaneously unify the environment to the theatrical action. Interested in an organic architecture that responded to the dynamism of contemporary life, the stage became an actorless stage—a living machine—where the architecture correlated to the dynamic movements of bodies in action. Architecture came to life as the body became automated; they fused together in dynamic spherical expression.

Although Prampolini and Kiesler’s stage theories resonated, Kiesler ironically published Hönigsfeld’s *Theater Ohne Zuschaure—Das Stegreiftheater* to illustrate Prampolini’s text in 1924. Neither Kiesler nor Prampolini supplied the image at the time that best represented Prampolini’s vision. Hönigsfeld’s theater, although it lacked atmospheric effect of a moving, shifting, projective core, best illustrated a space that incorporated full theatrical action within an expansive spherical

⁹⁴ See Prampolini, “*L’Atmosfera Scenica Futurista*,” 77. See also Prampolini, “The Magnetic Theatre and the Futuristic Scenic Atmosphere,” draft in Little Review (Chicago, Ill.) Records, 7. See also Prampolini, “The Magnetic Theatre and The Futuristic Scenic Atmosphere,” *Little Review: The International Theatre Exposition*, 106.

⁹⁵ See Enrico Prampolini, “The Magnetic Theatre and the Futuristic Scenic Atmosphere,” draft in Little Review (Chicago, Ill.) Records, 10. See also Prampolini, “The Magnetic Theatre and The Futuristic Scenic Atmosphere,” *Little Review: The International Theatre Exposition*, 108; emphasis in original.

structure. Prior to the accusations of plagiarism, Kiesler promoted Moreno's theater as an aspiring form for modern theatrical space.

Das Railway-Theater

Kiesler had every intention however to create a spherical theater similar to Prampolini and Moreno, as he described in his introductory essay "*Das Railway-Theater*" in the 1924 Vienna exhibition catalogue. [Fig. 1.35] In his short manifesto, Kiesler outlined the new modern theater as a polydimensional theater of speed where the ground served only as a prop for an open spherical construction. The auditorium would circle in loop-shapes with electromotive movements around a spherical stage core. The actor would disappear completely. All scenery would be lost. There would be no proscenium, instead "*Milieu-Suggestion schafft die Filmprojektion. Plastische Formen entstehen aus glasartigem Ballonstoff.*"⁹⁶ Plastic forms created from glassy balloon materials would comprise the space of an atmosphere invoked by film projection. Kiesler's *Das Railway-Theater* was an elastic composition—a synthetic proposition. It supposed a spherical shape to house an illusionary space for an exploding scenic atmosphere.

"*Die Raumbühne des Railway-theaters*" as Kiesler described, was a highly theoretical proposition derived through researched study of a vast network of ideas elaborated by varied avant-garde groups presented at the festival. It described an architectural environment that synthesized Prampolini's Futurist ideas for Magnetic Theater, with Meyerhold's Constructivist devices, and Moreno's spherical Theater of Spontaneity. It conflated ideas for the Peep-Show stage and Kiesler's Space Stage design with the contemporary image of a "Railway". Germans commonly used the English word "Railway" in the 1920s for "rollercoaster".⁹⁷ Kiesler referred to the rollercoaster as the space of new modern theater—a space that loops around with speed in an endless strip, a mobius strip. The rollercoaster provided the architectural image for the first

⁹⁶ Kiesler explained that his theater will have "plastic forms...created from glassy balloon materials...[where] atmosphere is invoked by means of film projection." See Friedrich Kiesler, "*Das Railway-Theater*", in *Internationale Ausstellung Neuer Theatertechnik Konzerthaus Unter Mitwirkung Der Gessellschaft Zur Foerderung Moderner Kunst, Der Stadt Wien 1924*, ii; my italic, my translation.

⁹⁷ This observation on the term rollercoaster was first observed by Barbara Lesák in "Visionary of the European Theater," 40.

Endless. Kiesler conceived the Endless as a series of moving rail cars seamed together along a continuous undulating structure—animated by motion.

Endless Theater

Kiesler claimed that he presented his Endless Theater in 1924 at the Vienna exhibition, but there is no evidence to support he drew the plans prior to 1925, or constructed the model prior to 1926.⁹⁸ [Fig. 1.36] As he recalled near the end of his life in the article, “Notes on Architecture as Sculpture,” in 1965,

when I first conceived and finally designed the first “Endless” and exhibited it in Vienna in 1924 at the Music and Theater Festival of the city, it presented itself as a flattened sphere, whose meridional section was a circle and whose longitudinal section was an ellipse. The purpose was to create a double enclosure of welded glass related to the interior of an elastic design of ramps, a variety of free-standing elevators and spiraling rows of seats and walks for actors and audience to use simultaneously or separately. At the lower part of the arena there were hotels, gardens, and cafés. Thus the totality of a theater with all its technological equipment, including projections over the whole sky dome area, could continue without interruption for days and weeks as a center of entertainment dedicated to the exuberance of living.⁹⁹

The Endless Theater exhibited a double-skinned surface that housed the “totality of theater” with all its projection technology in one expansive arena. It consisted of a series of elastic ramps and elevators that spiraled around rows of seats and walkways. Audience and actors could move about simultaneously and freely in continuity with the action of the play. Movement flowed about the space endlessly. The shape of the theater performed in relation to the form of the event.

In his 1965 description of the Endless Theater, Kiesler referred to Moholy-Nagy’s 1924 Theater of Totality published in *Die Bühne im Bauhaus 4*.¹⁰⁰ Similar to Kiesler and Prampolini, Moholy-Nagy described modern theater with its multifarious complexities of light, space, plane,

⁹⁸ There are no images available, or any mention of an Endless Theater in any documents, published or otherwise in 1924. Theater historian R.L. Held however took Kiesler’s 1960s statements to be true. Barbara Lesák historicized Kiesler claims more accurately in her book *Die Kulisse explodiert: Texte Zur Raumbühne*, but part of the mystique surrounding Kiesler’s Endless is that it continues to resist historical accuracy.

⁹⁹ Frederick Kiesler, “The Future: Notes on Architecture as Sculpture,” *Art in America*, v. 54, May-June 1966, 61.

¹⁰⁰ See L. Moholy-Nagy, “Theater, Zirkus, Varieté,” in *Die Bühne im Bauhaus 4*, ed. O. Schlemmer, L. Moholy-Nagy, F. Molnár (München: Albert Lagen Verlag, 1924) 47. For English translation see L. Moholy-Nagy, “Theater, Circus, Variety,” in *The Theater of the Bauhaus*, ed. O. Schlemmer, L. Moholy-Nagy, F. Molnár, tr. Arthur S. Wensinger (Middletown, Connecticut: Wesleyan University Press) 1961, 52.

form, motion, sound and the body as a living organism—a *Gestaltung*. Moholy-Nagy proposed that theater and stage form an environment equivalent to “a living psycho-physical organism, as a producer of incomparable climaxes and infinite variations.”¹⁰¹ Alongside its rotating platforms and bridges of moveable construction similar to Kiesler, Moholy-Nagy’s Theater of Totality proposed to use film and non-opaque surfaces to enhance audience participation.¹⁰² However unlike Kiesler and Prampolini, Moholy-Nagy suggested no spatial form for his theater structure.¹⁰³

For his Endless Theater, Kiesler envisioned a continuous structural surface that employed dematerializing illusory spatial effects within an enclosed form. Kiesler envisioned an, “all in one double-shell building of ‘cast glass’ to create diaphanous effect[s]”. As he described, the,

double shell would contain the heating and the cooling, and consisted of an interplay of ramp, platform, and elevator—an endless showplace throughout the whole space. This music center included also hotels, parking lot, gardens all enclosed in the same shell. [...] The Endless had a continuous intertwining of vast ramps which lead into others at several levels until spectators and actors practically reach the ceiling. The players and the audience can intertwine anywhere in space. There, I feel, is a first attempt at an architectural expression of spatial integration. It fully used the construction principle of continuous tension—there was not a single column in the whole structure.¹⁰⁴

Incorporating vast program of gardens, hotels, cafés, theater and a parking lot within one endless atmosphere, Kiesler integrated theatrical space to perform in response to the fluid movements of a dynamic mass of people.

¹⁰¹ Ibid. 60.

¹⁰² In 1922, Moholy-Nagy designed an athletic recreation facility that incorporated a series of kinetic ideas similar visually to his proposal for a Theater of Totality. The images of his facility were not published in the original Bauhaus publications or subsequent catalogues of their work prior to his *The New Vision* books. The images of the facility have marked similarity to ideas that likely influenced Kiesler, and although they have been compared to Kiesler’s work, it is unclear Kiesler saw them prior to designing his Endless Theater in 1925 or 1926. See László Moholy-Nagy, *The New Vision*, originally published in German 1928, tr. Daphne M. Hoffman (New York: Brewer, Warren & Putnam Inc., 1946) 164, 165. For comparison see Lesák, *Die Kulisse explodiert*.

¹⁰³ Moholy-Nagy, *The New Vision*, 56, 57. Similar to Kiesler, the Theater of Totality aimed to integrate humanity into a creative Constructivist stage production that would reach the emotions of the masses. The Theater of Totality would not be limited, however to what he saw as Futurist, Dadaist, or Expressionist emphasis on the “Mechanized Eccentric” stage—devoid of human emotions and bodily actions. Moholy-Nagy had already proposed a geometric score for the “Mechanized Eccentric” theater—*Partiturskizze zu einer mechanischen Exzentrück*—that he featured in *Die Bühne im Bauhaus 4* and presented in Vienna at Kiesler’s 1924 exhibition. See also Kiesler, “*Internationale Ausstellung Neuer Theatertechnik*, 27.

¹⁰⁴ Kiesler, “Kiesler’s Pursuit of an Idea,” 110, 111.

Planned as a circle, with its section as an ellipse, the material, form, and structure of the Endless Theater consisted of unique structure and construction. [Fig. 1.37, Fig. 1.38] According to Kiesler, “this ‘Endless’...[was] the first continuous shell construction scheme with no foundation to support it.” Its double “opaque glass” or “plastic” shell structure would maintain “thermal control.”¹⁰⁵ The flattened spherical shell would not be solid. “A battery of slide and film projectors” would give the shell the “illusion of the infinite.”¹⁰⁶ Expanding his earlier experiments with film for the R.U.R., Kiesler hoped to dispel the limits of the building surface using cinematographic projection. He proposed an uninterrupted “*disclosure*” of space for his Endless Theater through long span building structure that incorporated diverse and extensive action within an infinite atmosphere: “*Die Kulisse explodiert*”.¹⁰⁷

Advances in glass technology provided Kiesler potential structure to house his expansive theater events. In Kiesler’s description of “an International architecture...[,] ONE STYLE FOR ALL,” in his book, *Contemporary Art Applied to the Store and Its Display*, published in 1930, Kiesler argued how the glass walls of the *de Stijl* Group and Mies’ skyscraper studies that cantilevered floors out into space with “conquering distance” conjured images of boundless boundaries, limitless structures, and elusive settings.¹⁰⁸ In addition, he dedicated a full-page spread to Bruno Taut’s dual shell glass structure for the 1914 Exposition of the Koelner Werkbund.¹⁰⁹ [Fig. 1.39] “Built entirely of glass”, as Kiesler noted, Taut’s pavilion informed

¹⁰⁵ Kiesler, “The Future: Notes on Architecture as Sculpture,” 61.

¹⁰⁶ Ibid.

¹⁰⁷ Ibid.; emphasis in original; see also Frederick Kiesler, “Die Kulisse explodiert,” *Pásmo = La zone = Die Zone = The zone = La zona*, Nr. 5/6 (Brno : A. Černík, 1925) as held in Getty Research Institute, Research Library, Special Collections and Visual Resources, Los Angeles, CA, # 87-S908, 1.

¹⁰⁸ Kiesler, “Die Kulisse explodiert,” 40.

¹⁰⁹ Two years prior to Philip Johnson and Henry Russell Hitchcock’s 1932 essay “The International Style: Architecture Since 1922,” and their exhibition at the Museum of Modern Art, Kiesler proposed an International style architecture. He credited the engineering constructions in Europe and America including grain elevators, the Eiffel Tower, power plants, and bridges as formative to “modern architecture”. Wagner, Sullivan, Berlage and Garnier, Kiesler argued all laid the foundations for an International architecture style developed ultimately by the *de Stijl* and their friends. See Frederick Kiesler, *Contemporary Art Applied to the Store and Its Display* (New York: Bretano’s Publishers Inc., 1930) 39, 40. Professor Kathleene James-Chakraborty brought this information to my attention when I lectured on “The Kiesler Effect” at the University of California, Berkeley, February 2004.

Kiesler's structural concepts.¹¹⁰ For the Endless Theater, Kiesler proposed to use a dual shell welded steel and glass structure that fused a continuous curved glass surface with illusionary cinematic projection to eliminate all sense of an enclosing space.

Endless Controversy

Despite its innovative design, however, Kiesler's Endless project remains controversial. Kiesler gave varying dates of its inception from 1916 to 1924, the plans and sections do not coincide, and even the terminology Kiesler used to define the Endless is arguably inconsistent. Historians such as Held have concluded that Kiesler's *Raumbühne* was effectively his first Endless design for—as Kiesler had explained in 1965—the *Raumbühne* was the “Center's double-spiral stage” of his “Endless Theater” project.¹¹¹ The Space Stage likely was the *Raumbühne des Railway-Theater*, but it was not his first Endless. Although in German *bühne* translates as both theater and stage, and *Raum* means both room and space, for Kiesler, he used the term “Endless” specifically to translate “*Raumtheater*” (as distinguished from *Raumbühne*) into English.¹¹² Kiesler never used the term “Endless” or any German equivalent term (*Endlos* or *unendlich*) in any of his known writings or publications prior to 1926; he thereby first employed “Endless” in New York City to title his plans and the model of the “Universal,”—his

¹¹⁰ Although it is unknown if Kiesler ever saw the Glass Pavilion at Werkbund, he did include a chapter in his incomplete *Magic Architecture* book on Bruno Taut. Part X, Chapter Two, is titled the “Cities of a new Globe” by Bruno Taut and described Taut's work as that of “the typical ‘dreamer’ whose visions in content and form are laughed at by his contemporaries, but...they are nothing else than the continuity of man's desire for an order which will produce the greater possibility of individual productivity and freedom.” Frederick Kiesler, *Magic Architecture*, unpublished, undated. Part X, Chapter 2, 1. As held in the Kiesler Archive, Vienna.

¹¹¹ Kiesler, “The Future: Notes on Architecture as Sculpture,” 61.

¹¹² In describing his first position in the United States as an architect, Kiesler reveals that he translated the “*Raumtheater*” into the Endless. He uses the term *Raumtheater* in the text to distinguish between his Endless Theater (the Space Theater) and the *Raumbühne* (the Space Stage). From the original German: “Erstens, lud mich die Architekturfirma Helmlé, Corbett & Harrison (der letztere jetzt Architekt der uno) ein, mich mit ihnen zu assoziieren, weil Harvey Wiley Corbett, einer der angesehensten Architekten Amerikas, die hoffnung hegte, mein “*Raumtheater*” (dass ich damals englisch “the Endless” benannte) zu verwirklichen.” See Kiesler, “*Als ich das Raumtheater erfand: Dokumente um das Jahr 1924,*” in *Die Kulisse explodiert, Texte zur Raumbühne, Forschungsprojekt Dr. Barbara Lesák*, research by Barbara Lesák for *Die Kulisse explodiert: Friedrich Kieslers Theaterexperimente und Architekturprojekte 1923-1925*, unpublished, undated, as held in the Kiesler Archive, Vienna, 3. Document includes dated information up to 1929.

“Endless Theater without stage” which he then oddly dated 1916 to 1925.¹¹³ 1916 was not a plausible date for Kiesler’s Endless Theater, although he repeated it several times (by his own account he only began his career in theater in 1922). In 1932, Kiesler ceased to suggest he envisioned the Endless around the time of the First World War when Meyerhold for example was making enormous advances in modern theater; he thereafter referred only to 1924 as the origin of the Endless.

1924 proved a critical year for Kiesler. His *Raumbühne* had already been subject to accusations of plagiarism; in addition, it was the year Moholy-Nagy published his 1924 Theater of Totality, which later informed Walter Gropius’ well-known 1927 Total Theater design for Erwin Piscator.¹¹⁴ [Fig. 1.40] To prove his originality in comparison to their work, Kiesler argued he had invited Piscator in 1924 to see the *Raumbühne* (his Space Stage) and actually made Piscator the plans that Gropius later used to design his Total Theater.¹¹⁵ In addition, Kiesler claimed to receive a call from the Piscator Theater in 1928 to return to Berlin to sketch an entire Space

¹¹³ Kiesler, *Exhibition Catalogue of International Theatre Exposition*, 4; see also *Little Review: The International Theatre Exposition*, 15, 6.

¹¹⁴ Michael Kirby in his text “Environmental Theatre,” compares Kiesler’s Endless Theater to Gropius’ Total Theater and Andreas Weininger’s proposal at the Bauhaus for a “Spherical Theater.” He attributes Kiesler and Weininger’s theater to 1924, Gropius’ theater to 1926. This comparison is fairly common, and has been repeated by Lesák, Sgan-Cohen, Held, Marc Dessauce, and others. See Michael Kirby, “Environmental Theatre,” in *Total Theater: A Critical anthology*, ed. E.T. Kirby (New York: E.P. Dutton & Co.: 1969) 267. It should be noted however, that at the Weimar, there was no theater to stage events and develop theater architecture until the Bauhaus moved to Dessau in 1925. In his March 16, 1927 lecture at Dessau, Schlemmer recognized that only now could they examine the validity of the, “space-stage [Kiesler’s project] as an idea”. See Oskar Schlemmer, “a lecture with stage demonstrations,” *Bauhaus 1919-1928*. ed. Herbert Bayer, Walter Gropius, Ise Gropius, (London: Martin Secker & Warburg Limited, 1975) 162. As published by The Museum of Modern Art, New York 1938. Lecture originally delivered at the Bauhaus, March 16, 1927 and originally published in bibl. No. 30, 1927, no. 3, 1, 2. Over the next several years they developed varied stage proposals at the Bauhaus. Student, Weininger proposed the design for his spherical theater in 1926. Walter Gropius worked on his famous Total Theater design for Erwin Piscator in 1927, and Moholy-Nagy designed his stage sets of light and shadow for the Berlin State Opera, the “Tales of Hoffman” in 1928. See *Bauhaus 1919-1928*, 166.

¹¹⁵ Questions surrounding Kiesler’s Space Theater were substantial enough at the time to impress Kiesler to compose a text on the events surrounding 1924. As he states regarding Erwin Piscator: “Seither verblieb ich in Amerika, trotzdem ich im Jahre 1928 einen Ruf vom Piscator Theater erhielt nach Berlin zu kommen, um für ihn Plane für ein vollständiges Raumtheater zu entwerfen. Ich hatte im Jahre 1924 versucht Piscator zur Regie aufder Raumbüne einzuladen und machte ihn mit den Plänen völlig vertraut (die Pläne wurden später von Gropius verwendet).” Kiesler, *Als ich das Raumtheater erfand: Dokumente um das Jahr 1924*,” 2, 3.

Theater. Although Kiesler did meet with Piscator in New York, December 19, 1936, it is unclear the depth of their relationship or the validity of Kiesler's claims.¹¹⁶

Despite the valued and unique character of Kiesler's work, the recognition of his originality and authenticity was extremely important to Kiesler. But his efforts to either clarify or cloud his reputation tended to compound confusion. In 1930, he attempted to explain away the inconsistencies between his plans and section for the Endless Theater.¹¹⁷ Yet in spite of his effort, the attention he drew to his plans only proved to fuel recent allegations. In 1996, alongside the major exhibition and publication of Kiesler's work by the Pompidou in Paris, Marc Dessauce published a study that attributed Kiesler's Endless Theater to Marcel Duchamp and Constantin Brancusi among others.¹¹⁸ Dessauce's suppositions were based on visual associations without significant evidence; however, more recently Gunda Luyken wrote her dissertation attributing Kiesler's plans to Duchamp, again based on generally visual associations and the discrepancies Kiesler highlighted.¹¹⁹ Kiesler's drawings appear quite similar to Duchamp's animation films of the same time. It is likely Duchamp's experimental animation film *Anemic Cinema*, made in varied iterations from 1920 to 1926—with its funnel effect of contracting and expanding rotating disks—may have proved a model for Kiesler (similar to ideas studied by Richter and Eggeling). However,

¹¹⁶ See Steffi Kiesler's Diary, as held in the Kiesler Archive, Vienna.

¹¹⁷ When first published as "A Project for a 'Space-Theater' Seating 100,000 People," in *Architecture Record*, 1930, Kiesler suggested in caption that the plan was only the stage platforms rising on the right half of the section of his theater, and not the plans of his entire theater. Kiesler had drawn two plans of the Endless Theater, but neither matched the section. One plan suggested a space similar to the Space Stage, while the other was too symmetrical to match the section of the Endless Theater. See Frederick Kiesler, "Project for a 'Space-Theatre' Seating 100,000 People," in *Architectural Record*, May 1930, 495.

¹¹⁸ Marc Dessauce, *Machinations: Essai sur Frederick Kiesler, L'Histoire de L'Architecture Moderne Aux États-Unis et Marcel Duchamp*, ed. (Paris: Sens & Tonka, 1996). See also *Frederick Kiesler, artiste-architecte*, ed. Chantal Béret (Paris: Centre Georges Pompidou, 1996). Whether the egg-shaped sculptures of Brancusi or even the estranged houses of Hieronymus Bosch's *Alchemical Man* in part inspired Kiesler's eggshell structures remains hard to determine; Kiesler certainly was familiar with both. In light of all the similar provocative proposals from other theater designers of his generation however, it seems simplistic to suggest either Bosch or Brancusi provided definitive inspiration. Art historians often suggest Hieronymus Bosch's image inspired Kiesler. Kiesler most likely saw Bosch's paintings on display at the *Akademie der bildenden Künste Wien* as a student where they are housed in the permanent collection. Kiesler had also intended a chapter on Bosch in his *Magic Architecture* book—although no notes or chapter lines were ever written (See Appendix 3). For more information on Bosch's influence on Kiesler, see Yehuda Safran, "In the Shadows of Bucephalus," as in *Frederick Kiesler (1890-1965)*, ed. Yehuda Safran (London: Architectural Association, 1989) 10.

¹¹⁹ See Luyken, *Frederick Kiesler und Marcel Duchamp—Rekonstruktion ihres theoretischen und künstlerischen Austausches zwischen 1925 und 1937* (see introduction, n. 38).

there are no known conflicts between Duchamp and Kiesler over the originality of these work to remotely support he plagiarized Duchamp's ideas or drawing methods. [Fig. 1.41]

De Stijl Intent

Despite the controversy surrounding Kiesler's *Raumbühne des Railway-Theater*, the overall success of the 1924 Vienna New Theater Technique exhibition led to an invitation from his former instructor Joseph Hoffmann to organize and stage the Austrian Exhibition of International Theater for the *Exposition Internationales des Arts Décoratifs et Industriels Modernes* at the World's Fair in Paris in 1925. As commissioner in charge of the Austrian Pavilion, Hoffman invited architect Peter Behrens who taught at the Academy of Fine Arts, Vienna (*Akademie der bildenden Künste Wien*) to design the main pavilion; Kiesler designed the section on theater located in the Grand Palais, where it is now more commonly accepted Kiesler presented the first "rough version" of his Endless.¹²⁰

For the exhibition, Kiesler originally hoped to build an Octophon theater similar to ideas described by Dadaist Raoul Hausmann in his article "Optophonics" in *1G*.¹²¹ [Fig. 1.42] Kiesler designed the Octophon stage to incorporate sound and film in intensive theatrical events. Similar to ideas by Craig and Prampolini, Optophon Theater would be actorless and automated. The Octophon featured a series of platforms and stairs similar to Appia's stage designs with a central axial stage and series of equidistant circular columns or rotating partitions. The plan of the building suggested dividers of thin material or glass resting between rectilinear columns used to

¹²⁰ See Michael S. Sgan-Cohen, "Frederick Kiesler: Artist, Architect, Visionary," 60, (see introduction, n. 26). In general it is now accepted that Kiesler likely presented a "rough version" of the first Endless in 1925 at the World Exposition of the Decorative Arts in Paris, at least according to a 1949 Editorial from the editors of *L'Architecture D'Aujourd'hui*. But as there are no known photographs of the model at the 1925 exhibition, it is generally accepted that Kiesler presented only the plans and section of what he would have not described at that time to be his Endless Theater but the *Raumbühne des Railway-Theater*. See The Editors, *L'Architecture D'Aujourd'hui*, "Translation from the French of the Editorial of L'Architecture D'Aujourd'hui," June 1949, 1, as held in the Frederick Kiesler Papers 1923-1993, Microfilm Reel 127, Archives of American Art, Smithsonian Institution, New York.

¹²¹ *1G*, 3.

create non-structural walls. The Octophon was too difficult and costly to build however, and was substituted by Kiesler with an alternate structure.¹²²

At the exposition Kiesler constructed his now well-known “City in Space” exhibition project—a significant Elementarist design, which successfully incorporated Wagner’s concept of the *Gesamtkunstwerk* into an innovative modern *de Stijl* language. [Fig. 1.43] The City-in-Space project “realized what we dream... one day could be done,” remarked van Doesburg. “This is the union of the arts and not – the Pavilion of *L’Esprit Nouveau* ([by] Le Corbusier).’ [...] I had, without knowing it, transformed Mondrian’s and van Doesburg’s paintings into three dimensions,” Kiesler recalled—creating an “insoluble fusion of painting, sculpture and architecture.”¹²³ The City-in-Space project, suspended in tension, created open – flexible – continuous space; it created no more barriers, “NO MORE WALLS,” Kiesler declared. “We must have organic building, ELASTICITY OF BUILDING ADEQUATE TO THE ELASTICITY OF LIVING.”¹²⁴

Kiesler’s City-in-Space project was constructed to exhibit a series of modern theater designs similar to Kiesler’s *Leger und Trager* (L+ T) displays at his 1924 Vienna exhibition. [Fig. 1.44] Kiesler’s L+T display designs served as a series of armatures with moveable parts that provided low platforms for models and higher backboards for images and drawings to be presented in asymmetrical patterns. The L+T displays created dynamic open space between polychrome painted surfaces that extended throughout the room in endless articulation. They incorporated theater and the displayed models and drawings as a complete work of art. The City-in-Space project elaborated those original L+T display devices into an expansive theatrical event space.

¹²² Original designs for Kiesler’s Octophon were published on the cover of *Little Review* magazine, February 1926.

¹²³ Frederick Kiesler, “In the year 1923...,” undated, unpublished, Text Box 05, Folder: Manuscripts,/Typescripts, Various, as held in the Kiesler Archive, Vienna.

¹²⁴ Originally published in German “*Ausstellungssystem Leger und Trager*,” *De Stijl* Serie XII nos. 10 & 11, 6 Jaar 1924-1925, 146. Translated by Frederick and Steffi Kiesler in varying versions from 1925-1930, as held in the Kiesler Archive, Vienna, unpublished; and published in Frederick Kiesler, “Manifesto of Tensionism,” in *Contemporary Art Applied to the Store and its Display* (New York: Bretano’s Publishers Inc., 1930) 49; emphasis in original.

Through careful lighting, Kiesler employed theatrical effects to highlight the City-in-Space structure as if floating in the room—unencumbered by gravity and spatial delineation.¹²⁵ [Fig. 1.45] The City-in-Space project created a networked field, one without boundary, limit, or wall in pure extension. Formed through systematic rectilinear lattice structures that eroded distinctions between space and place, it created multi-directional points, lines, and planes to suggest an open environment. The installation was thoroughly integrated in indeterminate spatial contiguity with its surroundings. Using primary colors, vertical, horizontal, and diagonal spatial elements set apart with distance—the structure generated dynamic movements and rhythm that expressed *Gestaltung*.

Kiesler's City-in-Space project, although *de Stijl* in composition functioned similar to a Constructivist stage used for display. Spectators moved about the theater projects independent of a clearly defined backdrop. In addition to its role as a presentation device, Kiesler designed the structure as an urban housing proposal for a “decentralized and entirely suspended [city] in space. A constellation without boundaries, floating dwellings, the habitat for the man of the future, where he can feel at home in anyone's place, and is welcomed.”¹²⁶ To create an open environment, Kiesler used articulated joinery, with doubled post and beams that although systematic, appeared incomplete. He created an architecture that did not envelop space, but created tension through directed motion of elements suspended in relation to each other. Movement and gesture from strong parallel and perpendicular linear elements created energetic extension, while large polychrome colored panels created the sense of walls, floors, and ceilings. Space created between panels provided partial boundary that suggested multiple habitats. As Reyner Banham famously argued, Kiesler's City-in-Space project represented “the ultimate condition of the ideas of *de Stijl* and Elementarism.”¹²⁷ It advanced spatial strategies already well

¹²⁵ For more on Kiesler's theatrical lighting effects for his City-in-Space project see Bruno Reichlin, “The *City in Space*,” in *Frederick Kiesler, artiste-architecte*, ed. Chantal Béret (Paris : Centre Georges Pompidou, 1996) 11-21.

¹²⁶ Lillian Kiesler, “Frederick Kiesler Biography,” Frederick John Kiesler Papers, New York, 10/31/80, 169, as held in the Frederick Kiesler Papers 1923-1993, Archives of American Art, Smithsonian Institute, New York.

¹²⁷ Reyner Banham, *Theory and Design in the First Machine Age* (Cambridge: MIT Press, 1999) 198. Alfred H. Barr equally praised Kiesler's City-in-Space project, calling it “technically and imaginatively the boldest creation in the *de Stijl* tradition.” See Alfred H. Barr, *Cubism and*

articulated by *de Stijl* architect Gerrit Rietveld's furniture designs. It best achieved an elementary means of plastic expression as outlined by van Doesburg in *1G*, 1923.¹²⁸

Elementarism, the late strategy of the *de Stijl* movement, evolved from van Doesburg's theories on plastic architecture. Already in 1916, van Doesburg sought "*the separation of the various realms of plastic expression*," in contradistinction to Baroque architecture. Where the Baroque attempted to fuse art, architecture, painting and sculpture in illusionary scenographic representation of confusing built form—van Doesburg argued for clear separation of the arts into their elementary components. Arts would find new expression that did not negate their respective contribution to a total work of art, but would support clear mutual relationships.

De Stijl attempted to clear ground of stylistic approaches and decorative motifs to derive a universal language for art and architecture. It would formulate a *Gesamtkunstwerk* through "total synthesis effected through pure plastic means."¹²⁹ "This synthesis of art and life [was]...intended as a reconstruction of European intellectual life," van Doesburg argued.¹³⁰ There would be no more arbitrary use of plastic expression, no subjective choices of form; instead the union of art and architecture would derive through the "*organization of plastic means as an unmistakable unity*".¹³¹ "Plastic expression necessarily demanded plastic means," van Doesburg observed.¹³² For van Doesburg—plasticity formed new unity.

Plastic expression in *de Stijl* architecture derived from the same elementary principles as painting. The plastic architect, like the plastic painter, handled materials and colors to create contrasting energies where wood and concrete for example could create a sense of "contraction" and "extension". For example, concrete generated "static extension" while iron produced an

Abstract Art (Belknap Press: New Ed edition, March 1986) as quoted by Ben Schmall in "Design's Bad Boy: a pint-sized scrapper who, after thirty years, still challenges all comers," *The Architectural Forum*, February 1947, 89.

¹²⁸ *1G*, 3.

¹²⁹ Originally published in *De Stijl* vol. v 2, Feb. 1922, 23-32; vol. v 3, Mar. 1922, 33-41; English translation, Theo van Doesburg, "The Will to Style: The new form expression of life, art and technology (Lecture held in Jena, Weimar, and Berlin)," in *Theo van Doesburg*, ed. Joost Baljeu (New York: Macmillan Publishing Co., Inc., 1974) 126.

¹³⁰ *Ibid.*

¹³¹ Originally written in Weimer 1922, and published in *De Stijl* vol. VI, 1, Mar. 1923, 10-14; English translation, "The new aesthetics and its realization," in *Theo van Doesburg*, ed. Joost Baljeu (New York: Macmillan Publishing Co., Inc., 1974) 129; emphasis in original.

¹³² *Ibid.*

“elastic extension (because of its characteristic of expansion)”.¹³³ Through contrast of void versus mass, contraction versus expansion, transparent versus opaque, plan versus elevation—discordant, complementary, and contrasting energies achieved unity and maintained proportion. *De Stijl* sought unity through juxtaposition of oppositions—through binary logic of comparisons. *De Stijl* created elasticity and continuity by creating virtual space in *relative* tension.

For van Doesburg, Einstein’s Theory of Relativity suggested radical departure from classical methods of expansion in three-dimensional mass to create innovative plastic form. Unlike Frank Lloyd Wright’s horizontal shifts and extensions in traditional architectural mass, van Doesburg appealed to a contemporary concept of space-time to support modern architecture. As he understood, “because of the advance of physics in our own times, the concept of matter as solid substance was changed and, as in the field of art, came to be seen as a *unit of energy*.”¹³⁴ Demonstrating his understanding of a scientific explanation of mass and form, van Doesburg constructed a series of models in 1922, the Weimar models produced at the Bauhaus, which suggested multi-sided interpenetrating squares. Space flowed between and within box forms to create interpenetrating unresolved volumetric conditions. Architect Cornelius van Esteren met van Doesburg while teaching his *de Stijl* course at the Bauhaus. Working together, they produced the next three iterations of complex space-time architectural models exhibited at Leonce Rosenberg’s Gallery in Paris October 1923.¹³⁵ [Fig. 1.46]

Impressed by his mentor’s theories, Kiesler invited van Doesburg to speak in Vienna, at the 1924 exhibition. In Vienna, van Doesburg spoke on “The Development of Modern Architecture in Holland,” a lecture he had already given in Prague and Berlin earlier that year.¹³⁶ Van Doesburg published a similar version of this lecture as his manifesto “Towards Plastic Architecture” in *De Stijl* 1924.

¹³³ Ibid.

¹³⁴ Ibid; emphasis in original.

¹³⁵ For extensive study on space-time and the impact of Einstein’s theories of relativity on modern art and architecture, see Linda Henderson, *The Fourth Dimension and Non-Euclidean Geometry in Modern Art* (Princeton University Press: Princeton, 1983). See also Sigfried Giedion, *Space, Time and Architecture: The Growth of a New Tradition* (Harvard University Press: Cambridge, 1941).

¹³⁶ Joost Baljeu, *Theo van Doesburg*, (New York: Macmillan Publishing Co., Inc., 1974) 66.

In van Doesburg's Vienna lecture, he defined the plastic architecture that young Kiesler would develop into his 1925 City-in-Space project. Architecture van Doesburg argued, must be proposed entirely anew. Any *concept* or "form-idea" of "predetermined type" must be suppressed. Instead, "function, mass, light, materials, plane, time, space, colour, etc." are the creative elements, the "*plastic elements*."¹³⁷ Forms are not determined *a priori* in concept but developed experimentally in time in *percepts*. Economical, functional, and "shapeless" —"*formless*"—"the new architecture is not built...from a mold into which functional spaces are poured," he explained. "The interior and exterior is determined in a rigid manner by rectangular planes; that...can extend to infinity on every side." (D 1, 4) Existing in balanced relationship, the "duality between interior and exterior" is suppressed. (D 4) "The new architecture is open," with subdivision made through moveable partitions and screens. (D 5) Boundaries and limits are diffused through the structure of varied interrelated open and elastic compositional elements.

Eventually the planes will disappear and become a new unbounded form of architecture. Non-Euclidean calculations in time and space will create a new plastic aspect of four-dimensional space-time. Different spatial cells will develop from the center towards the periphery and will "give the impression of being suspended or of hovering in the air, contrary to natural gravitation," he argued. (D, 5) There will be no more monotonous repetition and normalized symmetry—instead architecture will create a "balanced relationship of unequal parts...through their functional character." (D 6) Color will be an elementary means of expressing harmony of architectural relationships. Each element, whether mass, color, volume, plane, point, line, etc. will, "contribute to create a maximum of plastic expression" all at once in harmony. (D 7) All parts attributed to the whole plastic composition of the structure that evolved, floated and shifted back and forth in time and space.

¹³⁷ Theo van Doesburg, originally written in Paris 1924, and published in *De Stijl*, Series XII 6-7, 1924, 78-83; English translation, "Evolution of Modern Architecture in Holland," 3, Box 6, Folder 22, Little Review (Chicago, Ill.) Records, 1914-1964 UWM Manuscript Collection 1, University Manuscripts Collection, Golda Meir Library, University of Wisconsin-Milwaukee, General Files, Theo van Doesburg; draft of English translation for *Little Review*; emphasis in original; hereafter cited in text (hereafter cited in text D). See also Theo van Doesburg, "Towards plastic architecture," in *Theo van Doesburg*, ed. Joost Baljeu (New York: Macmillan Publishing Co., Inc., 1974) 142.

Plastic architecture, according to van Doesburg was both synthetic in form and process; it combined a variety of elements held together through arts of spatial contiguity. In addition, all the plastic arts collaborated to one new theory of form. Van Doesburg proposed a synthetic methodology of process and *percept* that exceeded any one modern-ism to boldly incorporate ideas from a range of contemporary arts. To create a total work of art, van Doesburg believed “*The laws of space* and their endless variations” will be “organized into a balanced unity”.¹³⁸ “Elementarism may be viewed as a synthesis of the new plastic notions of our times. The ‘isms’ of recent decades went bankrupt. [...] Elementarism is the equivalent of relativity, of the latest discoveries about matter...the Elementarist considers life only as ‘a perpetual transformation’,” by destroying the use of “static axis in contempt for Euclidean view of life.”¹³⁹ Elementarism is the beginning of synthesized modern expression, one that draws from other ‘isms’ to create an endless process of becoming a total work of art.

Kiesler adapted van Doesburg’s theory of neo-plasticity—opposites held in tension through synthetic collaboration—for his City-in-Space project. Kiesler generated perpetually dynamic spatial patterns. He attempted to create balanced harmony through dynamic synthesis of indeterminate heterogeneous spatial volumes floating in virtual space-time. Kiesler directly challenged gravity to create continuity between separate architectural elements using energetic expression. Kiesler created what he described as “tension” through point, line, and plane relationships that effectually formed volumetric and directional spatial qualities seemingly without literal connection.

Combination of elements relied on the viewer’s intuitive psychological response to strong linear direction and multiple planar surface relationships to create perceived tension (the illusion of tension) between the varying parts of the sculpture.¹⁴⁰ Different habitants could conceive varied spatial rooms in multiple combinations. The illusory perception of spatial tension between

¹³⁸ Theo van Doesburg, originally written in Paris 1923, and published in *De Stijl*, Seires XII 6-7, 1924, 89-91; English translation, Theo van Doesburg and C. van Eesteren, “Towards collective construction,” in *Theo van Doesburg*, 148; emphasis in original.

¹³⁹ Theo van Doesburg, originally written in Rome, July 1926, and published in *De Stijl*, Series XIII 75-6, 1926, 35-43; English translation, “Painting and plastic art: On Counter Composition and Counter-Plastic Elementarism (A Manifesto fragment),” in *Theo van Doesburg*, 159-160.

¹⁴⁰ For example, two planes in parallel set at a distance apart became locations of place that began to define the space in-between.

points, lines and planes created an ever-evolving sense of surface and boundary in the mind's eye. This *virtual* tension emerged from the viewer's intuitive sense of things that connect in the *psyche* the relative relationships between the varying parts of the sculpture. The imagination then projected those spatial understandings onto the sculpture. Suspended in literal tension, the project represented gravity through perceived tension. The *anticipation* that there had to be a connection to counter the natural forces of gravity, and the *anxiety* generated from the perception that without this connection the sculpture would fall, gave the work a tactile sense of its construction.

The observer empathetically experienced the literal structural tension of the installation. This psychic feeling of *tension* was not simply projected between the inner referential parts of the City-in-Space sculpture, but the viewer's relation to the project. The psychic relation to the work was *auratic*; it was *felt* and projected onto the inanimate installation sensually—intuitively.¹⁴¹ Tension in modern art and architecture had both a structural basis and a psychological affect. It mimicked scientific inquiry as to the state of material stability, energy, and form discovered in modern physics, while at the same time enacted anxieties attributed to an instable modern sensibility.

Tension became a central trope in Kiesler's work, as it had been for van Doesburg.¹⁴² As a fundamental element in van Doesburg's essays on Elementarism published between 1926 and 1928 in *De Stijl*, tension was the basis for introducing the *oblique* into painting and architecture that depended on discord, and not neutralized harmony. "Elementarism postulate[d]... a *heterogeneous*, contrasting, unstable manner of plastic expression based on planes oblique in

¹⁴¹ For my use of the term auratic here, I am specifically referring to Walter Benjamin's use of the term in his later writings. See Walter Benjamin, "On Some Motifs in Baudelaire," 186, 188. See also Walter Benjamin, "Little History of Photography," in *Walter Benjamin: Selected Writings Volume II: 1927-1934*, ed. Michael W. Jennings (Cambridge: Harvard University Press, 1999) 514-517. The subject of aura will be discussed in more detail in following chapters.

¹⁴² Published in *De Stijl* magazine from 1925 Kiesler presents images of his L+T Displays (*Leger und Trager*), Space Stage, and City-in-Space projects alongside his first article on "Vitalbau" that he would later describe in 1930 as his "Manifesto of Tensionism." See Frederick Kiesler, "Ausstellungssystem: Leger und Trager," *De Stijl*, vol. VI, no. 10/11, 1925, 137-146; see also Frederick Kiesler, "Erneuerung des Theaters," *De Stijl*, vol. VII, no. 75/76, 1926/27, 51-53; also Frederick Kiesler, L'Architecture Élémentarisée, *De Stijl*, vol. VII, no. 79/84, 1927, 101-102.

relation to the static, perpendicular axis of gravitation,” van Doesburg argued.¹⁴³ “Elementarism reject[ed]...the orthogonal through the suppression of rigid statics—Elementarism [was]...based on neither the horizontal nor the vertical alone,” he proposed.¹⁴⁴ Similar to Richter and Eggeling’s descriptions of balance, counter-balance, contrast and analogy that generate dynamic spatial rhythm, van Doesburg postulated an “*unbalanced counter-composition*, which [was]...a phenomenon of temporal-spatial tension in colour, line, or plane.”¹⁴⁵ These incomplete, offset, and dynamic spatial relationships created open systems that elicited instable spatial stress.

Tension as a discourse in art and architecture was of course not Kiesler or van Doesburg’s invention. Tension in art and architecture is used to define a sense of space—an interval—held *open* between two or more points, lines, or planes that establishes a relationship whether physical (hidden force) or imaginary (psychic stress) that relates objects together within an environment.¹⁴⁶ Piet Mondrian in his first essays on Neoplasticism in painting published in *De Stijl* 1917 considered *tension* fundamental to universal platonic principles in painting.¹⁴⁷ A line or plane he believed was never straight and pure in nature, but tended towards the absolute. Tension emanated in the very effort to achieve the absolute. The relationship between lines, planes, and color that co-existed on Mondrian’s canvas created the illusion of space through corresponding *tension*.

In correspondence, composition, angularity, and planarity, an artist could create unnatural plastic space on a flat surface. Space created by tension—psychically through haptic sense of eye and memory—in rhythm, contrast, analogy, or juxtaposition expressed spatial *expansion*—volume. The plastic arts created synthetic space whether in painting, sculpture, or

¹⁴³ Theo van Doesburg, originally written in Paris, Dec. 1926 – April 1927, and published in *De Stijl*, Series XIII 78, 1926/7, 82-87; English translation, “Painting and plastic art: Elementarism,” in *Theo van Doesburg*, 163.

¹⁴⁴ *Ibid.* 164.

¹⁴⁵ *Ibid.*

¹⁴⁶ Tension in biology and engineering sciences represents a structural force that resists material fracture versus compression that keeps materials from collapsing together. Russian Vladimir Grigorievich Shukhov (1853 -1939) is likely the first to develop tensile structures in steel, including complex curved hyperbolic structures.

¹⁴⁷ See Piet Mondrian, “Neoplasticism as Style,” “The New Plastic as ‘Abstract-Real Painting: The Plastic Means and Composition,’” “The Rationality of Neoplasticism,” “From the Natural to the Abstract: From Indeterminate to the Determinate,” in *De Stijl*, ed. Hans L.C. Jaffé (New York: H.N. Abrams, 1971) 36-88.

architecture through a concept of perceived tension.¹⁴⁸ Tension conceived as a spatial force connected and responded to surrounding environmental parameters; it also became the psychological connection between matter held-open in space. For the Elementarist, it was neither the walls nor the place they occupy that generated space, but the psychical tension created by an elastic condition perceived in relative expansion or contraction.

Elasticity was a dynamic condition of the plastic arts. As understood by van Doesburg, Prampolini, and Kiesler it formed comprehensive engagement between sensual psychic bodies and their perceived environments. There did not need to be an actual connection between the body and its environment, whether in architecture, sculpture, or theater. A psychical condition experienced through bodily affect in correlation to a perceived set of interactive changing forces acting between different physical conditions provided relative connection. Structures were not bounded to their environment solely by visual or contextual relationships. Unseen energy forces were understood to act between bodies and their environment that correlated all entities within all inclusive elastic spatial conditions. Kiesler extended a *de Stijl* understanding of elastic space to form the Endless. The naturally elastic body could be unified to its surrounding environment in correlated rhythm through perceived tension.

1926

The study of rhythm in the plastic arts as incorporated into the action, stagecraft and scenery of modern theater became the central focus of the International Theatre Exposition held in New York City, 1926. Kiesler and his first wife Steffi had lived in Paris until December 1926—where upon Tzara's recommendation, Jean Heap of *Little Review* gallery and journal invited Kiesler to present his exhibition of new European avant-garde theater to America.¹⁴⁹ Kiesler and

¹⁴⁸ The story that is told of Léger and Corbusier's discussion of Kiesler's City-in-Space exhibit is a part of the folklore surrounding Kiesler's project. As Ben Schmall recorded, "Even Corbusier in reply to Fernand Léger's glowing description of the "floating city," replied: "But how does he keep the houses up? Does he hang them from zeppelins?" See Ben Schmall, "Design's Bad Boy: a pint-sized scrapper who, after thirty years, still challenges all comers," *The Architectural Forum*, February 1947, 89.

¹⁴⁹ The *Little Review* started in Chicago, March 1914. It was a monthly literary magazine founded by Margaret Carolyn Anderson. In the first issue, Anderson published works by the Chicago poets and included studies of feminism, psychoanalysis, and Nietzsche. The *Little Review* also featured

Heap organized the International Theatre Exposition held from February 27 to March 15 1926 in the Steinway building at 113 West Fifty-Second Street, New York.¹⁵⁰ [Fig. 1.47, Fig. 1.48] They worked together on the exhibition catalogue and a special theater edition for the *Little Review*.

Heap took full responsibility for both publications, although Kiesler was highly involved. Unlike Kiesler's 1924 exhibition catalogue, however, the 1926 exhibition catalogue and 1926 edition of the *Little Review* emphasized less radical discourse on theater and revolution in Europe. The *Little Review* instead focused on Heap's interests in the plastic arts, while featuring several extended versions of the 1924 essays presented by Kiesler in Vienna, translated into English. Essays by Kiesler, Léger, Walden, Prampolini, and Russolo elaborated studies on the impact of cinematographic projection, the dynamism of machines, the articulation of Futurist Theater, and the atmospheric study of sound, color, cadence, and tone. Similar to the 1924 exhibition, there were essays on Russian theater that featured Meyerhold and others. Unique to the publication was an extensive study of Craig's theories on the *Übermarionette* featured alongside Schlemmer's costumes and masks at the Bauhaus. In addition, there was a focused study of rhythm used by Richter and Eggeling in their experimental animations relevant to the plastic arts.

In Hans Richter's essay "Rhythm," published in the 1926 *Little Review*, Richter described how rhythm animates plastic form. [Fig. 1.49] Rhythm he proposed, is the life principle of animate form, and "not definite, regular succession in time or space," but rather as he explained the "inner nature-force which directly forms and animates ideas."¹⁵¹ Rhythm he suggested implies movement and action typically associated with organic life that synchronizes time with space. Rhythm enlivens the plastic arts—it animates the inanimate body. As animation is an enlivening

poetry and political writings by anarchists such as Emma Goldman. When Jane Heap, from the School of the Art Institute of Chicago, joined the staff, she pursued study of the plastic arts. She used modern typography and published works by contemporary painters, sculptors, and photographers. The *Little Review* moved to New York in 1917. Ezra Pound was the magazine's foreign editor from 1917 to 1919. In 1922, the *Little Review* moved to Paris. Issues were sporadic until 1926, when publication was suspended until a final issue of the *Little Review* was published in 1929. For more information, see the Archives Department at the University of Wisconsin-Milwaukee, *Little Review* Records, 1914-1964, UWM Manuscript Collection 1.

¹⁵⁰ The new Steinway Hall building opened in 1925 to house and showcase a center for Steinway Piano music and sales at 109 West 57th Street.

¹⁵¹ Hans Richter, "Rhythm," *Little Review: The International Theatre Exposition*, 21.

operation, the art of giving apparent movement to inanimate objects, rhythm constructs space through the *figment* of imagination. Visual effects of pattern and rhythm simulate the appearance of living architecture, what in 1925 Kiesler had described as “*Vitalbau*”.¹⁵²

For Kiesler, vital building practices incorporated the nature of organic life through the presence of an intrinsic force that motivated action similar to what Bergson described as *Élan Vital*.¹⁵³ Goethe’s 19th century morphological studies in the *Metamorphosis of Plants* informed Kiesler’s vitalist preoccupations.¹⁵⁴ For Goethe plant life unfolds from node to node and leaf to leaf. [Fig. 1.50] Growth is successive and continuous as organs on the stem expand and contract to become varied shaped leaves or reproductive organs. [Fig. 1.51, Fig. 1.52] Vital growth is an elastic building process where *Gestalt* or fixed form is only a momentary phase of *Bildung*—form change. Animate forms, Goethe argued, “are all manifestations of a living shaping power which moulds them. This shaping power [is] immanent in all life.” For the vitalist, inner life force shape outer forms.¹⁵⁵

As a vitalist theater designer, Kiesler believed live action on stage provided the inner life force that shaped his designs. Kiesler’s *Emperor Jones* stage set and Space Stage both coordinated the rhythms of living bodies to dynamic stage scenery to synthesize time with space. To animate the inanimate body of architecture by coordinating the stage to the rhythm of live action dominated European theater throughout the early 1900s. Whether the stage performed to

¹⁵² See Frederick Kiesler, “Manifest: Vitalbau-Raumstadt-Funktionelle Architektur,” *De Stijl*, 6 July, 1925, 10-11.

¹⁵³ Vitalism suggests the body has a life source that motivates action. Vital theories deeply rooted in the history of epigenetic, embryological, and behavioral studies of plant and animals, oppose Cartesian mechanics through belief in the presence of indeterminate fluid forces and processes that motivate the actions of organic life. See Hans Driesch, *der Mensch und die Welt* (Leipsic: Reinicke, 1928); English translation, *Man and The Universe*, tr. W. H. Johnston (London: George Allen & Unwin Ltd., 1929).

¹⁵⁴ Kiesler was a devout reader by the 1920s of Goethe’s *Metamorphosis of Plants*. As Lillian Kiesler described, Kiesler carried Goethe’s morphological tale on his person when he moved from Vienna to New York in 1926. “Goethe was important to Kiesler...and with Goethe, the *Metamorphosis of Plants*, theory of color, he was a theater person, he was sublime for Kiesler.” See Lillian Kiesler, “The Kiesler Archive,” Interview by Charlton, Maryette, as held in the *Maryette Charlton papers, 1929-1998*, Archives of American Art, Smithsonian Institute, New York, 4/8/94 tape 1 of 2, as acquired 5/11/2001, Box 32 of 36.

¹⁵⁵ Johann Wolfgang von Goethe, *Die Metamorphose der Pflanzen* (1790); English translation, “The Metamorphosis of Plants,” in *Goethe’s botany; the Metamorphosis of Plants (1790) and Tabler’s Ode to Nature (1782)*, tr. Agnes Arber, *Chronica Botanica*, v. 10, no. 2 (Waltham, Mass, 1946)

the movements of the actors, or actors performed to the movement of the stage equipment represented the two ideas influencing modern theater. On one hand, the stage modulated to bodily action as a living machine—on the other, the body performed to the rhythms of machines effectively as an automaton. Both ideas suggested an extreme form of automatism—one vital, the other mechanical. Marionettes used in theater embodied both these ideas.

As Remo Bufano emphasized in his study on “The Marionette in Theater” in the 1926 *Little Review*, Craig’s proposal for an actorless theater was too extreme to achieve mass appeal. Craig had fantasized the actor be subsumed by theater into the action of the play. He hoped actors would lose their personality, their subjectivity, and their emotion to become part of the autonomic mass of an everyday crowd. The costume became the device on stage to mitigate actor participation. Machinic costumes incorporated the body within the scenic atmosphere. Russo’s studies in the 1926 *Little Review* journal of “Ballet Plastic” and Prampolini’s provocation for “Magnetic Theater” best demonstrated Craig’s intention. [Fig. 1.53] Bufano however, posed a less automatist proposal where actors remain on stage in a subdued fashion to elicit empathy for the action on stage.

Costumes by Schlemmer featured alongside Bufano’s article illustrated his intention. Schlemmer researched with his students at the Bauhaus costumes as an architectonic stage element. The Bauhaus studied human movement and speech in an elementary sense “as an event.”¹⁵⁶ Working alongside Schlemmer, Moholy-Nagy proposed his Theater of Totality as the human mechanics of everyday circus. He published his “Human Mechanics” *Variété* in Heap and Kiesler’s 1926 *Little Review* journal in addition to the Bauhaus Journals.¹⁵⁷ [Fig. 1.54] The circus as Moholy-Nagy recognized offered a terrific example—if altogether *Kitsch*—for new theater technique. The circus, its performers and clowns, posed to eliminate subjective influences in

¹⁵⁶ See Oskar Schlemmer, “a lecture with stage demonstrations,” *Bauhaus 1919-1928*, 164.

¹⁵⁷ See *Little Review: The International Theatre Exposition*, 50. Kiesler also included Moholy-Nagy’s “*Partiturskizze zu einer mechanischen Exzentrück*” in his 1924 Vienna exhibition, see “*Internationale Ausstellung Neuer Theatertechnik Konzerthaus Unter Mitwirkung Der Gessellschaft Zur Foerderung Moderner Kunst, Der Stadt Wien 1924*, 27. See also Jeffery Schnapp, “Border Crossings: Italian/German Peregrinations of the Theater of Totality,” *Critical Inquiry* 21 (University of Chicago) Autumn 1994, 93.

theater without annihilating human character necessary for eliciting mass affection and innervating the crowd.¹⁵⁸

Adolf Loos presented the same observation on the circus in his article on “The Theater,” written December 3, 1925 for Heap and Kiesler’s exhibition catalogue and the 1926 *Little Review* journal.¹⁵⁹ [Fig. 1.55] Loos suggested that the connections between the “nerve force” between the participants— “the nervous system of the crowd” —enabled theater to support intellectual creativity resonant with modern times. (Loos 94, 96) The modern stage did not display intellect for public gaze, but in turn enabled a “succession of nervous impressions as will prepare the ground for the growth of the roots of creative mind.” (Loos 94, 96) Through light, space, balance, color, and variety in time and sound, similar to architecture, Loos proposed that “the theater [was]... a preparatory school for unborn intellect”. (Loos 94, 96) The modern stage trained apperception to modern experience, and provided interactive engagement. Loos compared the experience of the new mass theater to that of the circus that could affect the crowds “comprising all sorts and conditions of men.” (Loos 94, 96) “For the circus form,” Loos argued, “F. Kiesler has created the ‘space-stage’ (*Raumbühne*) which carries in itself the seeds of a revolution in staging methods.”¹⁶⁰ Similar to the circus act or athletic event that shocks or astonishes the spectator through extraordinary human feats of prowess, the circus stage uses subjective effects—visual and material effects—to motivate the mass, swarm, or crowd to the new spirit and intellect of modern times.

¹⁵⁸ See L. Moholy-Nagy, “Theater, Zirkus, Variété,” *Die Bühne Im Bauhaus* 4, 47; English translation, “Theater, Circus, Variety,” in *The Theater of the Bauhaus*, 52.

¹⁵⁹ Adolf Loos, “The Theater,” *Little Review: The International Theatre Exposition*, 92, 94, 96; hereafter cited in text (e.g. “Loos, 94”) See also Adolf Loos, “Theater,” *Exhibition Catalogue of International Theatre Exposition*, 6-7.

¹⁶⁰ Adolf Loos, “The Theater,” *Little Review: The International Theatre Exposition*, 96. See also Adolf Loos, “Theater,” *Exhibition Catalogue of International Theatre Exposition*, 7. The footnote in the English translation held in the Little Review archive is annotated with a footnote demarcation, but there is no indication that the text of the note regarding Kiesler was not made by the author, Adolf Loos. I have not located the original German text. Lesák also refers to Loos as the author of the footnote, and suggested that Loos followed Kiesler’s career in Berlin, Vienna, and Paris. See Adolf Loos, “The Theater,” as held in Little Review (Chicago, Ill.) Records, 1914-1964 UWM Manuscript Collection 1. University Manuscripts Collection. Golda Meir Library. University of Wisconsin-Milwaukee. General Files, Adolf Loos, Box 8, Folder 11, 1-3. See also Lesák, “Visionary of the European Theater,” 40.

Kiesler's *Raumbühne*, as Loos argued, revolutionized the space of the stage. Kiesler used spatial continuities between actors and spectators, section and plan, to create complex social conditions for contemporary life. Not unlike Loos' *Raumplan*, Kiesler's *Raumbühne* produced an immersive environment for action to oscillate between varied spatial contiguities, endlessly.¹⁶¹ Loos' houses maximized the interrelationships of space, floor, wall, surface, and opening through a series of integrally compartmentalized spaces.¹⁶² Rooms opened-up to rooms that revealed spaces above and below that provided atmospheres for intimacy and security, movement and free-play.¹⁶³ Inspired by the "theater box" Loos *Raumplan* showcased performances of everyday life throughout the house.¹⁶⁴ Kiesler's *Raumbühne* performed to explode the domestic space of the "theater box" to create diversity, interactivity and free-action on the modern stage. Similar to the Constructivists and Futurists, Kiesler aimed to train the masses to the new community spirit of modern times. With elastic synchronicity oscillating automatically if freely, Kiesler's theater merged actors and spectators in and about the spiraling action of the new circus theater – the Endless stage.

As Loos, Moholy-Nagy, Kiesler, Meyerhold, and Prampolini were all well aware, theater architecture in the early 20th century aimed to train mass audiences through "psychophysical assimilation" to the speed, quality, and intensity of the modern age.¹⁶⁵ They employed visual and

¹⁶¹ For a history of the *Raumplan* as suggested in the work of Adolf Loos, and articulated by Heinrich Kulka in 1931 and later Ludwig Münz, see Johan van de Beek, "Adolf Loos – patterns of town houses," in *Raumplan versus Plan Libre: Adolf Loos Le Corbusier*, ed. Max Risselada (New York: Rizzoli, 1988) 27. See also Heinrich Kulka, *Adolf Loos: Das Werk des Architekten* (Vienna: Schroll, 1931) 14. See also Cynthia Jara, "Adolf Loos's 'Raumplan' Theory," *Journal of Architectural Education* (1984-), Vol. 48, No. 3. (Feb., 1995) 185-201.

¹⁶² The *Raumplan* was realized in exemplary fashion in the Rufer House in Vienna (1922), as Stanislaus Von Moos has argued, and more refined in the Tzara, Moller, and Müller houses from 1925 to 1930. Stanislaus von Moos, "Le Corbusier and Loos," *Raumplan versus Plan Libre: Adolf Loos Le Corbusier*, 23.

¹⁶³ Similar to Loos' 1908 American Bar that used mirrors along a coffered ceiling to reflect infinitely above a crowded room -- Loos used a variety of tactics to both expand and contract the architectural limits of his interior spaces. Loos' *Raumplan* created a psychological dimension, Beatriz Colomina described as "the intersection between claustrophobia and agoraphobia". See Beatriz Colomina, "The Split Wall: Domestic Voyeurism," in *Sexuality and Space*, ed. Beatriz Colomina (New York: Princeton Architectural Press, 1992) 76.

¹⁶⁴ Ibid. In addition to Colomina's research on Loos' houses and the history of the theater box, see also the study of intimate immensity: interiority, exteriority, intimacy, fear, and control in Gaston Bachelard, *La poétique de l'espace* (Paris: Presses Universitaires de France, 1958); English translation, *The Poetics of Space*, tr. Maria Jolas (Boston: Beacon Press, 1969).

¹⁶⁵ See L. Moholy-Nagy, "Theater, Circus, Variety," in *The Theater of the Bauhaus*, 57.

haptic techniques of power to control their audience. In the theater, one could study a wide range of modern tactics that engaged the art of mass persuasion. Theater provided an environment suited to test techniques that elicited mass manipulation. The desire to affect mass change for varied political, social or ethical reasons was studied in theater not only by stage designers, but by architects. Architects sought to expand control studied in theater beyond the confines of the stage to create a *Gesamtkunstwerk*—a total work of art of effects.¹⁶⁶ Theater provided training ground for modern architects to invent new forms of space that elicited both freedom and control.

¹⁶⁶ Architects have continued to chase after the total work of art for almost a century. Although some might assert this is no longer the case. See Mark Wigley, "Whatever Happened to Total Design," *Harvard Design Magazine*, Summer 1998, vol 5.

2. *Milieu-Suggestion shaft die Filmprojektion: Frederick Kiesler and the Applied Arts*

Your eyes, lit up like shop windows
And trees illuminated for public celebrations,
With insolence make use of borrowed power.

Charles Baudelaire

For both Walter Benjamin and Siegfried Kracauer, *distraction* was not a limitation to social awareness but held great promise to train, illuminate, and mobilize the masses. As indicated in their writings of the 1920s and 1930s, film was understood as the newest medium of distraction as Benjamin would suggest utilizing a “*physical shock effect*” produced through constant moving images to “induce heightened attention” (*Geistesgegenwart*).¹ Distraction however was not unique to film—the Dadaists and Surrealists also utilized physical shock effects to induce a heightened presence of mind as a means to promote social awareness through the fine and graphic arts. Moreover, as Benjamin provocatively argues, “architecture has always offered the prototype of an artwork that is received in a state of distraction,” for a building is “received in a twofold manner: by use and by perception. Or better, tactilely and optically;” it is experienced for the most part “spontaneously” through “casual noticing” in a state of *habitual* activity that does not require concentrated attention.² In a state of distraction habits of action in response to the built environment become *autonomic* supporting for Benjamin the promise of a “covert” “training ground” for “profound changes in apperception.”³ Architecture, film, as other arts theoretically could be formulated to achieve an *unconscious* habitual affect on the masses through distractive *conscious* stimulation in the visual and tactile realm affording in Benjamin’s

¹ Walter Benjamin, “The Work of Art in the Age of Its Technological Reproducibility: Third Version,” in *Walter Benjamin: Selected Writings Volume 4: 1938-1940*, ed. Michael W. Jennings (Cambridge: Harvard University Press, 2003) 267, 281.

² Ibid. 268.

³ Ibid. See also earlier translation draft, Walter Benjamin, “The Work of Art in the Age of Its Technological Reproducibility: Third Version,” tr. Michael Jennings (n.p.,n.d.) 13.

words not only “an adaptation to the dangers threatening it”—“the increased threat to life that faces people today”—but the potential for collective revolutionary transformation.⁴

Credited with bringing the applied arts (*Kunstgewerbe*) to American shop window displays, Kiesler made a curious effort to develop the synaesthetic potential of the optical and the tactile for mass consumer manipulation. Using design techniques developed from the modern arts Kiesler sought to promote enigmatic *physical shock effects*—material effects—through the optical techniques of distraction in an effort to lure the consumer towards the *intérieur* of the store. Kiesler developed these techniques of mass manipulation to enhance the art of persuasive storefront architecture in contradistinction to the surrealist fantasy as presented by Baudelaire for inciting collective revolutionary action. Unlike the avant-garde, Kiesler did not have aspirations to disrupt the flow of capitalist expansion and overthrow the dominance of the bourgeoisie. Kiesler’s work instead marked an astute realization and utilization of the changes in perception and technology that responded to a shift in the auratic power structures of the everyday life of the city dweller of the 20th century. His work discloses the complicity and limitations of modern art to the authority of consumerism and politics surrounding mass culture.

Before immigrating to America in 1926 to organize and present European avant-garde theater for the International Theater Exposition in New York, Kiesler developed an urban manifesto—“Manifesto of Tensionism”—for *De Stijl* magazine. In his manifesto, Kiesler defined his interpretation of the modern city; it was accompanied by sectional spiral plans for a department store tower that declared the programmatic promise of shopping. [Fig. 2.1] Developing from ideas already presented in his constructivist “Space Stage” theater festival project in Vienna, and Endless Theater in New York, Kiesler’s department store presented continuity in tension “in free space” with the “abolition of the static axis.”⁵ [Fig. 2.2, Fig. 2.3, Fig. 2.4] As his Endless Theater situated the audience and actors together in continual movement on a double spiral stage to be encased within a glass shell—Kiesler’s department store tower was designed similarly. It promoted the “free equal distribution of traffic” that would combine product

⁴ Ibid. 281.

⁵ Frederick Kiesler, *Contemporary Art Applied to the Store and its Display* (New York: Bretano’s Publishers Inc., 1930) 48.

and consumer in a spiral environment where “shoppers will often walk down several floors without realizing it because of the slightness of the incline.”⁶ Able to move through the department store unencumbered by structure and mechanical systems from floor to floor, shoppers, casually—almost automatically—were to lose sense of time and place in *unity* amongst commodities as “the store becomes practically one continuous main floor” connected to other buildings and incorporated into the urban fabric in endless continuity.⁷

As Kiesler proclaimed in his manifesto, the department store tower as our future cities “will have NO MORE WALLS,” as “glass encases the entire structure.”⁸ The building would be open to the surrounding city and joined to other buildings at every third floor. Kiesler was promoting what he described as an *organic* building typology as “we must have organic building; the city in space; functional architecture; ELASTICITY OF BUILDING ADEQUATE TO THE ELASTICITY OF LIVING. [...]The new city will bring with it the solution of the problems of traffic and hygiene; make possible the diversity of private life and freedom of the masses.”⁹

The spiral plan encased in a glass tower was similar to Erich Mendelsohn’s 1926 *Schocken* department store; [Fig. 2.5] it promoted dynamic continuity through the promise of a new tectonic. Kiesler believed uninterrupted and elastic architecture expressing dynamic spiral motion could “carry...out the tenets of ‘tensionism’ in city planning” able to create “new kinds of living, and through them, the demands which will remould society.”¹⁰

According to Kiesler, shopping in the modern tower would be able to reconstitute urban life. As he suggested in his writings such a building would contain the open structure of the Eiffel Tower and the dynamism and communal intent of the Tatlin Tower.¹¹ [Fig. 2.6] Similar to the Russian Constructivists Kiesler promoted a festive dynamic atmosphere of unity through street theater for the masses. Walter Benjamin similarly referred to the popular intent of Constructivism as described in his 1925 essay exploring the streets of “Naples.” Kiesler was amongst a group of theorists and architects promoting what Benjamin described as buildings “used as a popular

⁶ Ibid. 49.

⁷ Ibid. 49.

⁸ Ibid.

⁹ Ibid.

¹⁰ Ibid. 48.

¹¹ Ibid. 41, 55.

stage” where “shops...are the reference points” and “everything joyful is mobile” and “circulate through the street.”¹² Benjamin fantasized that as “building and action interpenetrate in the courtyards, arcades and stairways. In everything they preserve the scope to become a theater of new, unforeseen constellations.”¹³ For Benjamin, through architectural porosity, transparency is achieved in the everyday life of the people and “the stamp of the definitive is avoided. No situation appears intended forever...[;] no figure asserts it ‘thus or not otherwise.’ This is how architecture, the most binding part of the communal rhythm, comes into being here.”¹⁴ Permanence and authority were theoretically undermined by the everyday theater, which Benjamin described as “porous” architecture.¹⁵ The popular stage symbolized a new “communal rhythm” that could be achieved through habitual *action* as promised by Tatlin in Russia, Benjamin in Naples, and Kiesler in Paris with his monument to shopping.

Display

Despite success in Europe, upon moving to America, Kiesler struggled to establish his career in the arts and architecture—his avant-garde interests in theater were not readily accepted, nor were most of his remarkable architectural projects.¹⁶ After being afforded the opportunity to design an experimental theater stage for Brooklyn Chamber of Commerce which

¹² Walter Benjamin, “Naples,” in *Walter Benjamin: Selected Writings Volume 1: 1913-1926*, ed. Michael W. Jennings (Cambridge: Harvard University Press, 1999) 417.

¹³ *Ibid.* 416.

¹⁴ *Ibid.*

¹⁵ *Ibid.* 419.

¹⁶ Unlike the 1924 Vienna exhibition, neither Kiesler’s exhibition nor the array of avant-garde theatrics they displayed impressed American newspapers or audiences. Many promises, especially financial, did not come through for the Kieslers. As Steffi found temporary work in the Anderson Gallery curated by Katherine Dreier, who became a close and influential friend for their future, Kiesler found work in the Harvey Wiley Corbett’s Architecture studio upon Dreier’s recommendation:

From what I can gather he [Kiesler] is really very able and understands how important it is to confirm our building laws, but as a European he cannot gauge and differentiate between who will use him and whom he can trust...if you could advise him on how not to appear too suspicious and yet protect himself it would help matters, after all their ghastly experiences here in America, they are on the verge of starvation, and I’m talking actual starvation.

Starving, anxious, and in need of support, Kiesler found himself searching to make a career in architecture in New York. On a one thousand dollar per year salary, he and Steffi barely survived. See Maria Bottero, “Ideas and Works,” 192.

was not however built, Kiesler secured the commission to design the storefront displays for Saks Fifth Avenue in New York. From 1928-1929 he designed a series of show windows hoping to bring art to the masses. However, Kiesler no longer advocated the use of avant-garde aesthetics to achieve social revolution. He had been heavily criticized at the International Theater Exhibition in New York for his endorsement of popular theater. Instead, Kiesler was trying to adapt to American life by accepting the demands of its capitalist culture and sought to use avant-garde practice for mass consumer *appeal*.

As many of his visionary ideas were conceptual as well as practical, he wrote a book, *Contemporary Art Applied to the Store and its Display* in 1930, to establish the history and theory of his interests in show window design. To promote the idealization of mass production through the use of machines similar to Bauhaus ideology, Kiesler saw an opportunity, not only for self-promotion and the betterment of his finances through glamorizing his role as the avant-garde designer, but also to suggest a new means available to reach mass culture—the art of window design and store front architecture.¹⁷ As he argued, “the department store...was the true introducer of modernism to the public at large. It revealed contemporary art to American commerce,” and as “the new art is for the masses...if ever a country has had the chance to create an art for its people, through its people, not through individuals and handicraft, but through machine mass production, that is America today.”¹⁸ Kiesler strongly emphasized the potential for a creative use of machine production that could be brought to the public through the everyday commerce of shopping. As he suggests, “unprecedented though it may be in the annals of art, a main channel through which the new style [machine aesthetics] will approach popularization is the store. Here is where a new art can come into closest contact with the stream of the mass, by employing the quickest working faculty: the eye.”¹⁹ The store is an opportunity to reach “the stream of the mass” in the streets, and this is most readily achieved through a conscious effort to

¹⁷ Kiesler throughout his American career had an amazing ability to get himself and his work featured not only in industry journals, but also in popular magazines and newspapers – especially *Vogue*. He was not hesitant to sell himself as the glamorous avant-garde artist to mass-culture for financial and career opportunity.

¹⁸ Kiesler, *Contemporary Art Applied to the Store and its Display*, 67.

¹⁹ *Ibid*, 68.

rethink window display architecture with the speed and immediacy possible through the mechanics of optical perception with the new art of abstract machine aesthetics.

Unlike practices in Germany, France, and Holland, prior to the late 1920s American shop window displays predominantly were designed to represent library and parlor rooms with wood paneling and wax mannequins simulating narrative postures of everyday life, and abstract machine aesthetics were only slowly introduced to the mass culture of the time. [Fig. 2.7] Although there had certainly been festive “eye-catching” holiday windows, as discussed by Leonard S. Marcus in *The American Store Window*, clutter was the main effort of American window display, and lighting tended to be diffused with little attempt to keep pace with modernity. In 1919, Raymond Loewy, who had emigrated from France, was one of the first to attempt to upset American shop window tradition in his Macy’s show windows using what Marcus described as a display whose “contrast meant to shock.”²⁰ Leaving the window in semidarkness with three spotlights focused on only one mannequin in a black evening gown Loewy hoped to strike the attention of passersby; however the simplicity and intensity of gesture was too strong for the time upsetting his boss and forcing his resignation.

Kiesler and Norman Bel Geddes by the late 1920s took on a similar challenge both seeming to claim to be the first to bring abstract art to the store window display. [Fig. 2.8] However, as *Display World*—the preeminent American trade magazine—had after 1926 consistently featured photographs of European *moderne* store displays inspired by window designs featured at the 1925 Paris *Exposition des Arts Décoratifs* that toured the United States—it would seem their claims were exaggerated.²¹ Art Deco became the leading fashion in Europe and America by the late 1920s with its streamlined machine aesthetic that attempted to seam together various artistic and architectural display productions. Bel Geddes proved to be a leader in America for his Art Deco and streamlined machine aesthetic in both window display and industrial design, while Kiesler developed a more hybridized avant-garde modern aesthetic incorporating the influences of Dada, *de Stijl*, Constructivism and Surrealism in his work.

²⁰ Leonard S. Marcus, *The American Store Window* (New York: Whitney Library of Design, 1978) 21.

²¹ See Janet Ward, *Weimer Surfaces: Urban Visual culture in 1920s Germany* (Berkeley: University of California Press, 2001) 208.

Applying modern art to window shop design in America, Kiesler developed a series of techniques for Saks Fifth Avenue in an effort to draw attention towards the merchandise and motivate passersby—to lure them into the store with greater ease. Kiesler designed the entire series of windows comprising the corner and 49th Street side of the store—fourteen windows in total—utilizing his experience in theater stage design to promote sales. As he suggested,

the revolution in the theatrical arts...developed into 'Constructivism' in Russia and Austria [and] it is in its manifestation that we must seek the models for show window decoration today. Looking through the glass into the show window is really like looking at the stage with this difference: the actors in art terms, are speaking plastics in motion, whereas the merchandise is a silent static object.²²

By claiming that innovation in theater led to Constructivism, Kiesler made the clear observation that window display was similar to stage design except that silent inanimate objects separated from the viewer through glass have been substituted for the animate actors. Unlike the open market halls where he proclaimed “commerce was free, more intimate...[o]ne could touch and handle what one proposed to buy,” merchandise had now been “sealed off” in stores needing the voice of “show windows, institutional propaganda and advertising. What was perfectly natural in the market halls must now be built up artificially by means of...media.”²³ As Kiesler well recognized, show windows are multi-dimensional stage sets situated on the street used for advertising through artificial media established behind the decisive gesture instituted as he argues by “a plate of glass between the merchandise and the passer by” that separates inanimate commodities from animate consumers.²⁴

Large expanses of plate-glass used for store fronts was well established in the United States by the 1880s. They mark a provocative relationship between what is interior and exterior to the street and establish the shift from the tactile and aural immediacy available at the open market to the persuasive optical tactics utilized in storefront architecture. As Kiesler argues, “contact between the street and store, between passerby and merchandise, this is the function of show windows,” and “after the passerby has halted, the silent window has a duty: to talk. To

²² Kiesler, *Contemporary Art Applied to the Store and its Display*, 110.

²³ *Ibid.* 68, 70, 71.

²⁴ *Ibid.* 68.

demonstrate. To explain. In short: to sell.”²⁵ The window marks a threshold between the street and the merchandise and becomes the means to which one must pass in order to engage objects of desire.

“What makes people purchase?” asks Kiesler, “Real and artificially stimulated needs,” he responds, as “usually artificial needs become genuine needs. *Habit* asserts itself and makes them *vital*.”²⁶ Show windows employed to manufacture needs through visual sensations elicit a habitual—tactile—response in the consumer. Tactile sensation induced by optical means manipulates the viewer to enter the store to indulge the comforts and pleasures experienced synaesthetically before the store window. Enticed without the immediate means to satiate the appetite—as glass upholds the promise of distance not allowing the body to experience the quality of what it believes it sees—desire intensifies in the effort to know the value and character of what remains illusory peaked by the opulent promises of material comforts eluded to the eye. Empathizing with the commodity, desiring its value, struck by its aura—manufactured through distance—one is enticed to surmount and control its presence by entering the store to purchase the product or more precisely, its reproduction. Similar to possessing a photograph—as Benjamin suggested, where the “technique of diminution...helps people to achieve control over works of art”—providing a material reproduction which can be readily held, comprehended, framed, or inscribed with personal meaning establishes a sense of identity and self-empowerment for the consumer.²⁷

The show window designates the newest and most vital of needs that mark the promise of inclusion or exclusion that helps to establish a semblance of identity—one’s surface character. As one peers into the shop window through the projection of *shadow* superimposed on the glass surface, character is marked in relation to identity as presented by the store through the displayed

²⁵ Ibid. 69.

²⁶ Ibid. 71; my italics.

²⁷ Walter Benjamin, “Little history of Photography,” in *Walter Benjamin: Selected Writings Volume 1: 1913-1926*, ed. Michael W. Jennings (Cambridge: Harvard University Press, 1999), 523; See also Walter Benjamin, “Paris Diary,” in *Walter Benjamin: Selected Writings Volume 1: 1913-1926*, ed. Michael W. Jennings (Cambridge: Harvard University Press, 1999), 348; See also Walter Benjamin, “The Work of Art in the Age of Its Technological Reproducibility: Third Version,” in *Walter Benjamin: Selected Writings Volume 4: 1938-1940*, ed. Michael W. Jennings (Cambridge: Harvard University Press, 2003) 253-254.

objects reflected back upon the viewer's eyes with narcissistic splendor. The means to affect subjectivity is afforded by the promise of what lies inside—prompted by desire to belong (whether inclusive or exclusive). Identity is presented and sold by the store—an identity Adorno would remark is directed towards an average of interchangeability, as everyone is “a copy”—a semblance. Identity is designed for mass appeal and the window display becomes the “surface-level expressions,” as Kracauer might suggest, of a “body culture” built to support the ever-changing tastes of an elusive “modern” or “contemporary” culture.²⁸ They are a pragmatic *ornament* built-in to the architectural facade able to adapt to changing needs of capitalist society. Unlike the permanent aged handcrafted architectural ornament that appealed to Ruskin in his well-known *Seven Lamps of Architecture*, this new dynamic architecture provides a building means to articulate an aesthetic of continuous transformation and invention requisite to support consumerism.²⁹ Capital exchange value generated through the constant flux and flow of new and improved goods underlies the need for flexible shop window design that can keep pace with competition and the continuous sale of an ever-evolving semblance of “good-taste” and “high-fashion.” Shop windows became a temporal zone situated between desire and consumption that could transform as needed to changes in consumer interest. Any attempts to counter existing trends could be met with immediate response through the design of a new window display. As Kiesler well recognized, display managers could quickly absorb radical aesthetic practices into their designs to provide the newest trend for consumer sales; it was Kiesler's interest to utilize revolutionary avant-garde techniques to design his Saks Fifth Avenue windows displays.

Show Windows

Accepting the premise of the show window as a means to sell merchandise with a silent voice that suggests, as he states, “this way gentleman, Here, only here can you see,” Kiesler

²⁸ Thodor W. Adorno and Max Horkheimer, *Dialektik der Aufklarung* (Social Studies Association, Inc.: New York, 1944); English translation, *Dialectic of Enlightenment*, tr. John Cumming (New York: Continuum, 2000) 145. Siegfried Kracauer, *Das Ornament der Masse: Essays*, by Suhrkamp Verlag (Suhrkamp Verlag, 1963); English translation, “The Mass Ornament,” *The Mass Ornament: Weimar Essays*, tr. and ed. Tom Y. Levin (Cambridge: Harvard University Press, 1995) 75.

²⁹ John Ruskin, *The Seven Lamps of Architecture* (New York: Farrar, Straus and Giroux, 1979)

designs his shop windows as a series—in articulate distractive rhythm.³⁰ The Saks Fifth Avenue windows as originally designed were lined up one after the other, surrounding the department store at the street level on three sides with a set of doors centered in each façade—effectively a square building with one façade hidden against the adjacent building. The plate glass display openings are set right up against the street—shallow in depth to afford as much interior store space as possible. As Kiesler points out, “custom has taught us that show windows lined side by side like the cards of a fortune-teller’s pack are the best method of announcing: ‘Here is a store, it sells this and this, come in, buy, call again.’”³¹ The Saks Fifth Avenue windows lined up in punctuating rhythm shape the experience of the passerby, as would the rhythmic gestures of a card reading with each image typically affording a suggestive role in the overall narrative of the display. Suggestibility no longer provided with immediacy from the voice of the sales person or tactile sensation from the actual material object readily available to one meandering in open market—the storefront has developed in response to changes in the urban environment.

As Kiesler suggests, “the evolution of the show window is due to one fact: Speed. For this reason the show window is a modern method of communication.”³² As 19th century industrialization brought changes through mechanization, and urbanity increased its speed of operation and action, the hustle and bustle of the city street—the crowds of passersby required a new means to elicit attention. Rhythmic storefront displays afforded, as Kiesler argues, “the most direct method of contact...we want to be informed about things quickly. Our age is forgetting how to hear and how to listen. We live mainly by the eye. The eye observes, calculates, advises: it is quicker than the ear, more precise and impartial.” Although perhaps overly enthusiastic to the impartiality of sight over aural senses, Kiesler realized speed is fundamental to the societal and cultural transformations occurring in modern urban life leading to the need to reevaluate the use and articulation of the urban façade.

Attempting to increase the efficacy of the Saks Fifth Avenue windows in response to changing urban life, Kiesler made a series of sketch designs that attempted to reconfigure the

³⁰ Kiesler, *Contemporary Art Applied to the Store and its Display*, 73.

³¹ *Ibid.* 78.

³² *Ibid.* 73.

store front façade as published in his 1930 book on applied art. His most dramatic option was an “experiment in a rhythmic storefront” that used a “series of setbacks at intervals from the building line...exerting a suction-like effect upon the passerby.”³³ [Fig. 2.9] Effectively he claimed that through a montage of juxtaposed windows of varying sizes and shapes asymmetrically arranged both in height and depth moving rhythmically forward into the street and back towards the store he could pull the passerby towards the storefront entry. [Fig. 2.10] At the entry he suggested using a “funnel effect,” which sought to merge the entry door into the display window which would then move the crowd through the doorway gradually one step at a time while also providing enough shelter to the interior so as to keep the door open as possible to the life of the city.³⁴ [Fig. 2.11] Similar to the department store designs of Eric Mendelsohn and the display windows of Paul Muhlberg in Germany of the same period, Kiesler wanted the door to effectively disappear to provide a continuous flow from the street towards the interior of the store.³⁵ However, he was unable to realize any exterior transformation to the façade of Saks Fifth Avenue and sought to develop other persuasive tactics by emphasizing continuity of “flux” and flow—as he described—through theatrical artistic transformations of the entire bank of existing show windows.

Contraction and Expansion

Utilizing techniques of “contraction” Kiesler sought to alter perception by controlling the eye in front of each individual window. As he suggested, “contraction gives you different depth and different backgrounds in one display” affording the ability to emphasize any particular object by moving or angling the sides, ceiling, or floor levels of the staging to concentrate attention and focus the eye.³⁶ [Fig. 2.12] Using flats, partitions, and platforms of various sizes and dimensions Kiesler was able to create the illusion of perspective directing the eye to various points within the window. Although the center might be the typical point in which the eye may be focused in a shop

³³ Ibid. 82-83.

³⁴ Ibid. 81.

³⁵ See Janet Ward, 210-211.

³⁶ Kiesler, *Contemporary Art Applied to the Store and its Display*, 107.

window, Kiesler was adamant for the opportunities available through the use of asymmetric designs. As he argued,

because of the asymmetry which characterizes practically every modern creation in the arts, focusing the gaze of the spectator on the mathematical center of the window is wrong. It does not matter which part of the window the merchandise is shown provided that the whole scheme of the display has been consciously integrated...Asymmetry is dynamic.³⁷

Conscious articulation of the gaze through asymmetry supported dynamic action unlike a symmetric scheme which is static.³⁸ For as he continues to argue, “the rhythm which results from asymmetry is mobile and kinetic. Therefore, if rightly composed, it directs the eye straight to the point to which you wish it directed. In this case it would be to your merchandise.”³⁹ Contraction was the means to focus conscious perception upon different objects within the display and through the addition of an asymmetrical composition Kiesler was able to provide a means to direct the eye from one image to the next—to move the eye within each window frame.

With the eye set to motion—directed from object to object through dynamic asymmetrical display techniques of *contraction*—Kiesler then sought to use *expansion* to establish rhythm and continuity of action between each window frame. [Fig. 2.13] As he states,

in the Saks Fifth Avenue windows I simply took out all the side walls which separated the fourteen windows and created a free rhythmic background throughout the entire window space. Each window seemed to continue into the next. Expansion was the basis of the rhythmic effect and continuity.⁴⁰

Seamed together in continuous progression from one window to the next, the effect created through contraction and expansion—within and between window frames—produced a spatial rhythm similar to Hans Richter and Viking Eggeling’s early scrolls and animation films. [Fig. 2.14, Fig. 2.15] Similar to the scroll, a continuous design of images was situated in a dynamic asymmetrical pattern where tension is produced *unconsciously* in the continuous back and forth movement of the eye with the “accumulated energy” being released as Richter might describe “into actual movement.”⁴¹ The continuous background undulating dynamically provided unification

³⁷ Ibid. 107.

³⁸ Ibid. 108.

³⁹ Ibid. 107.

⁴⁰ Ibid. 108.

⁴¹ Hans Richter, “Easel-Scroll-Film,” *Magazine of Art* (February 1952) 81.

and rhythm by use of memory between each window frame, which enticed the eye and in effect—the body—to move automatically along the street facade. Haptic sensation produced at intervals from the affect of the moving eye between striking images gives one the tactile impression of the dynamic action of the display in the process of becoming an ensemble in duration (*durée*). As a series of contracted frames each window focuses *conscious* attention with dynamic expression of asymmetrical action directing the eye amongst the merchandise within the display in a constant state of distraction. In effect, perception is similar to a series of photographs seamed together in continuous articulation that have fragmented and immobilized time as Henri Bergson might describe with “fixed” moments of consciousness, while our memory “solidifies into sensible qualities the continuous flow of things.”⁴² Effectively the Saks Fifth Avenue designs performed as a series of picture frames—movie frames—seamed together in continuous articulation set to motion—animated by—the speed of the passersby. [Fig. 2.16]

Coordinated to enhance the effects of contraction and expansion—to motivate the eye, and in turn the body, within and between each window frame was also Kiesler’s sophisticated attention to what Hans Richter described in respect to his own work as the “contrast and analogy” between materials and colors. These visual effects began to formulate a cohesive illusory filmic quality. As one journalist at the time described,

accordingly, lines and angles, wood and metal and glass are conspicuous in the reconstructed Saks display stages. Shallowness is a characteristic common to all the rebuilt windows. Similarly, a grayish-white wood has been employed for the background of each. This wood, cut into angles and curves, has been so set up that it creates the illusion, despite the actual physical shallowness, of a considerable depth to the windows...Here a suggestion of a cylinder, there a glint of brass or the sparkle of a mirror, and again the dull reflection of iron are expressive of the industrial age. The novelty of the background, however, instead of detracting from the merchandise, actually throws it into greater relief, the very shallowness of the window seeming to push it further forward.⁴³

⁴² Henri Bergson, *L'évolution créatrice* (Paris, 1921); English translation *Creative Evolution*, trans. Arthur Mitchell (New York: 1911) 272, 295, 306. See also Anson Rabinbach, *The Human Motor: Energy, Fatigue, and the Origins of Modernity* (Berkeley: University of California Press, 1992) 111.

⁴³ “New Saks-Fifth Avenue Window Sets Reflect Ultra in Display Background,” *Women’s Wear*, Saturday, March 24, 1928, as found in the Kiesler Archives, Smithsonian Archives of American Art, New York.

The background of gray undulating wood (actually Vehisote) with angles that accent varying objects in the display provided not only movement and continuity between each window, but helped provide an illusion of spatial depth. The store display effectively moved perception of figure-ground relationships back and forth in relief. Kiesler referred specifically to Fernand Léger's textiles and paintings as the inspiration for these effects. [Fig. 2.17] As Kiesler described, Léger used "shaded modeling of individual parts" in contrast with other "flat" parts in order to stimulate "dynamic character"—in that "the vigorous juxtaposition of highly modeled forms and purely flat surfaces creates such a basic contrast that by it alone the picture produces a dynamic effect."⁴⁴ The undulation of Kiesler's expanded background set against diversely focused individual elements created a rhythm of dynamic action in motion that stimulated the eye to perceive an illusion of greater spatial depth. Contributing to this effect was also the strong color, sparkle and distinction in material juxtapositions used to accentuate each object—catching the eye and sparking attention. As Kiesler described, "one sees only a chair, over which a coat and a pair of gloves have been thrown, displayed against a vast background. The background is of a neutral uniform gray, the coat is black velvet with a white fur collar, the gloves are also white, the cushion of the chair red, the wood of the chair gray."⁴⁵ Material and color analogy and contrast became part of the composition of a series of objects that work in a coordinated effort to elicit and manipulate attention and perception—orchestrated in unity. The background did not distract from the objects on display—it moved the eye haptically and the viewer sub-consciously amongst the sparkling objects in continuous articulation.

Kiesler's use of lighting played a significant role to spark attention and move the eye from object to object—the body from window to window. As a theater designer Kiesler had always sought the promise of lighting effects making claim to being the first set designer to use projective techniques for his R.U.R sets in 1922. Lighting his window frames they became in his words "aura-frames."⁴⁶ They could be lit from hidden valances around the perimeter of each individual glazed unit as Kiesler argued "to create an aura around the entire window;" "aura-frames used in

⁴⁴ Kiesler, *Contemporary Art Applied to the Store and its Display*, 22, 25.

⁴⁵ *Ibid.* 25.

⁴⁶ *Ibid.* 103.

a series of show windows, can result in attractive rhythms of light along the whole building front—the whole psychological value of color can here be utilized.”⁴⁷ Through lighting and color Kiesler sought to further enhance the serial action of the show windows to move the audience dynamically within one window and then on to the next. He even suggested the potential to “connect an electric clock to the lighting system of the window frame” in an effort to use time and motion where “light would flash on and off at determined intervals” turning the window display into an “advertising medium,” demanding the attention of the audience and moving them along set to the timed action of flickering images.⁴⁸

Kiesler brought concepts developed in film and theater to the three-dimensional bodily space of the street through his window designs created to stimulate the passerby to approach the store through striking lighting, materials, patterns and colors. The body synaesthetically experienced the space of the windows expanding out and into the street and contracting back into the store. Kiesler’s window designs dissolved the boundaries of spatial perception and incorporated the viewer into one continuous environment. Similar to watching a film on a screen, the audience became absorbed within the window’s illusory spatial effects. The surface boundary of the screen as an articulated street facade was designed to dissolve in motion, so the passerby would begin to lose sense of time and place as space seamed together into one event. Kiesler was able to engage the everyday life of the passerby and move them in a state of constant distraction towards the interior of the store as they coordinated their movements to the shock of haptic sensations induced by flickering images within an expanding spatial field.

Shock Effects

To increase these spatial and lighting effects, Kiesler suggested inducing heightened attention through shock as inspired by the Dadaists among intervals of atmospheric juxtapositions in tension as inspired by the Surrealists. In what Kiesler terms a “composite background” he suggested,

⁴⁷ Ibid. 102.

⁴⁸ Ibid. 103.

if a still more striking affect is desired, introduce a variety of other materials in combination...metals, sandpaper in brown, black or ochre, corkpaper, enlarged photographs, enlarged typefaces, etc. A further variation...would be to introduce light as a contributing element to the rhythm or pattern...by cutting openings in your background....the origin of this type of decoration...comes to us from the most destructive and radical artistic movement in Europe: Dadaism.⁴⁹

Dada techniques—material juxtapositions, lighting, signage, and photomontage—provided means to intensify the window display. [Fig. 2.18] As indicated in one of his children's window and junior apparel displays for Saks, Kiesler used leather of different colors in abstract patterns, molded aluminum, opaque glass and a variety of different shaped display frames with lighting to establish rhythm and definition to focus attention on the objects. [Fig. 2.19] Most curious however from the images are the hats displayed as lamp shades, the consistent use of headless mannequins, an oddly placed duck, subtly enigmatic draping of various fabrics, clothes and jewelry. Kiesler used these devices, as he described, for "Surrealism" with its "naturalism again magical and magnified" exemplified in the "natural illogical way...brings together all kinds of objects" and "orders these things into a logical pictorial harmony.... This is the task of the display manager...to create an atmosphere of tension between several pieces of merchandise exposed within the frame of the show window."⁵⁰ Creating an enigmatic atmosphere through tension between merchandise, Kiesler exposed and held open for observation each distinct, oddly placed object by providing space—distance. At once stimulated by dramatic colors and materials displayed in rhythm of distraction used as he suggested to "attract the gaze of the quick passer," Kiesler used enigmatic juxtapositions realized by curiously positioned and illogical objects to stimulate a pause—an interval of hesitation—that opened the mind to wonder. Stimulated to attention at a moment of hesitation, the intellect is held open—questioning the lack of resolution. The conscious mind—parrying the shock—draws conscious attention to the various shapes, colors, materials, and glimmers of *Schein*. The enigmatic opens a moment within the state of shock allowing the possibility for poetic experience in a state of distracted awareness. Open to suggestion at a moment of unresolved tension, one will search *critically* among the display windows for further direction and understanding. Enigma opens the mind, eye and in effect—the body—to wander

⁴⁹ Ibid. 115.

⁵⁰ Ibid. 21, 27.

amongst the inanimate objects on display removed from the hustle and bustle of everyday life on the busy street. Lured into a state of semi-autonomic *awakening*, the passerby's curiosity is peaked while at the same time guided sub-consciously.

Investigations to access the *unconscious* while *conscious* were the effort of the Surrealists, as they developed the tactics of the Dadaists in the early 20th century as a discourse of *automatism* in a state of *awakening*. [Fig. 2.20] The tactics of distraction were intimately linked to that effort as critically investigated by Benjamin in many of his writings; however, these tactics were not limited to their "revolutionary potential" but instead were available for a multiplicity of use. Of particular concern to Marxist critique is the ease with which people are manipulated to participate in the manufacture, production and consumption of marketable goods, which promise comfort through the provocative complexities of automatist practices as they mediate the animate and the inanimate (between subject and object). The mass culture of commodity fetishism with its translation of use value into exchange value within a market of exhibition was intimately implicated in the magical diction of an art of distraction. For Benjamin, this required "profane illumination" to demystify aura in an effort to open the "image space" for "bodily collective innervation."⁵¹ As the Surrealists sought to induce in the animate a state of semi-autonomic awakening through habitual action (as automatons), they sought to covertly mobilize the masses to revolutionary action using the "borrowed power," as Baudelaire suggested, developed by capitalism.⁵² [Fig. 2.21] Kiesler however in his storefront window designs was more an opportunist than an activist and sought to absorb Surreal and Dada techniques to further consumerism.

Kiesler employed a full range of artistic, photographic, cinematic and theatrical techniques to design his window displays—he brought avant-garde art to everyday life—as three-dimensional illusionist space. His shop windows were architectural—they engaged the body in motion through perception and habit—optically and tactilely—using applied artistic practices to build form. Using techniques of contraction and expansion Kiesler was able lure the passerby off

⁵¹ Walter Benjamin, "Surrealism," in *Walter Benjamin: Selected Writings Volume II: 1927-1934*, ed. Michael W. Jennings (Cambridge: Harvard University Press, 1999) 217.

⁵² Benjamin, "On Some Motifs in Baudelaire," 340.

the street to engage the art of shopping. Contraction was effectively able to heighten attention, while expansion sought to seam over disparate moments of conscious attention towards a unified spatial experience. Through montage, Kiesler juxtaposed and superimposed images, objects, and materials with dynamic asymmetrical affect to spark attention and wonder leading the mind and body to wander—open to suggestion. By creating an image space Kiesler manipulated the body space. Although designed for mass consumer appeal and not revolutionary affect—Kiesler’s work points to the remarkable promise to closely examine the practices of art, theater and film and their relation to architecture not solely in terms of content—but more in terms of dynamic haptic distractive technique.

Although content was important to Kiesler’s designs particularly in terms of material selection—it was certainly less important than other show windows of the time. Kiesler’s environments were descriptive—not entirely informative—they did not define a specific place, but were more interested in expressing dynamic gesture to manipulate perception. Kiesler’s windows were sparse in terms of presenting products that actually could be purchased. Instead they served more as dynamic advertising events that sought to draw attention and engage the curiosity of the passerby psychologically to move them emotionally and physically. Dynamic and lavish—insistent and yet seemingly casual in appearance—Kiesler’s window designs were artistic events that created a sensual auratic atmosphere to promote casual almost automatic interest and desire for shopping seamed in unity amidst commodities on display.

Aura effects

Kiesler realized there had been a shift in the power structures present in the everyday life of the 20th century city dweller and attempted to theorize a new typology of architecture that would utilize the aura of display within the evolving flow of capital markets. Kiesler was a visionary and his show window designs were conceived to move well beyond the limits of 19th century storefront designs to eventually incorporate all the technology and mechanics of the electric and eventually electronic world. Seeking to expand the potential of the “aura frames” of his show window designs, he argued for the complete removal of individual window frames.

Kiesler wanted to unify the entire exterior building facade into one continuous unit; as he suggested, if one “omits the window frame completely, the front itself becomes in fact the frame.”⁵³ He envisioned this effect in a series of unbuilt department store projects in the late 1920s and early 1930s proposing buildings that would be in their entirety “aura-frames”—lit up as a billboard. He envisioned these as the future of urban architecture. Inspired as he suggested from J.W. Buijs’ use of white opaque and transparent glass for the *Cooperatie De Volharding* in Holland, Kiesler designed two schemes both featuring a double exterior wall with glass on the exterior and a windowless interior to provide a shallow display casing over the entire building surface. [Fig. 2.22] Building upon J.W. Buijs use of white opaque glass for night lit signage, Kiesler suggested “transforming the whole space into a single electric sign.” Kiesler saw the potential to design a building entirely of glass to exhibit a frameless aura through a series of projective and illusory techniques. [Fig. 2.23, Fig. 2.24]

Although framing traditionally established aura in the static art of painting, Kiesler was well aware of the potential for a frameless building that utilized the façade as a billboard entirely for advertising display with a whole series of projective techniques. In particular, he promoted the use of “sensitized panels which will act as receiving-surfaces for broadcasted pictures,” as he predicted the use of television as well as movies “especially talkies, will be used to work together with them [light-bulbs and floodlights] in the promotion of sales, by advertising and publicity.”⁵⁴ Kiesler predicted the use of television “screen-curtains” in store windows “which will suddenly sweep down close to the plate glass...telling its story to the passerby.” He envisioned the electronic space of the store window to be interactive and “retain the view” of a passerby unlike the mechanized store windows he criticized of his time whose moving mannequins could not return one’s gaze. To that effect, he suggested inventing a “pushbutton system for the convenience of the passerby, one which would open and close windows at will.”⁵⁵ Kiesler ultimately hoped to create an electronic image space of projected illusionary atmosphere as a

⁵³ Kiesler, *Contemporary Art Applied to the Store and its Display*, 103.

⁵⁴ *Ibid.* 120.

⁵⁵ *Ibid.* 118.

casing surrounding the entire department store utilizing technology to its fullest potential. He even suggested using *virtual* techniques within the interior of the store.

Kiesler sought to match and even intensify the material expectations that arose for consumers outside the store when they moved inside. Here they would encounter “fashion news. Daily events. A talking newspaper. Scientific productions...Films which show desired merchandise to customers and explain its qualities and merits” as “sales robots.”⁵⁶ Kiesler was a visionary not limited by nostalgia for the *flânerie* of 19th century street life. He was not concerned that modern technology would, as Benjamin described, promote the decay of the *intérieur*—the end of *flânerie*—whose last bastion may have been the department store where external pedestrian street life was internalized as a “labyrinth of commodities” in which one can still roam.⁵⁷ Kiesler did not see the department store as the internalization of the street to evade the distracting crowds and machinations of 20th century life—instead he saw it as an opportunity to immerse the spectator within the virtual promise of technology. The interior climate for these designs was to be completely controlled through internal devices while the exterior display was to contain no support columns or structure so as to provide a free-flowing zone for unrestricted advertisement. As one of his schemes used glass elevators with exterior show windows as columns to lift the building off the street and provide open circulation, another scheme made use of opaque glass for signage, colored glass for spectacle, and was to even have glass floors. Glass became the prominent theme in these buildings as it had in his Paris department store tower of 1925 and his “Endless Theater” project of 1926. Kiesler’s projects would realize the potential to supplant the boundary surface of architecture with glass as a shell to separate exterior and interior public display with a surface that would negate a sense of place with an auratic zone of projected exhibition.

Unlike his contemporaries, Kiesler well recognized that glass had the potential to be auratic—perhaps in profound contradiction to International Style Modernists from whom he inevitably became estranged. During early International Style Modernism glass had become the

⁵⁶ Ibid. 120.

⁵⁷ Walter Benjamin, “The Paris of the Second Empire in Baudelaire,” in *Walter Benjamin: Selected Writings Volume 4: 1938-1940*, ed. Michael W. Jennings (Cambridge: Harvard University Press, 2003) 31.

prominent material of an ideology promoting transparent, open, and temporal community value. In his essay “Experience and Poverty,” Benjamin thought “objects made of glass have no aura...[As g]lass is in general the enemy of secrets. It is the enemy of possession.”⁵⁸ In strong support of the use of modern materials as promoted by Scheerbarth, Giedion, Mendelsohn and Taut, Benjamin believed modern architects were “converting human habitations into—the transitional spaces of every imaginable force and wave of light and air” through the “moral exhibitionism” of glass with its resistance to leaving traces.⁵⁹ Similar to hard cold steel, glass bears the potential, as Benjamin suggested, to end the “cult of dwelling.”⁶⁰ As the *Flâneur’s* role was understood to “read off” the everyday bourgeois objects and buildings throughout the city as a “master detective” searching urbanity for images “wherever they lodge”—building in glass and steel was understood to minimize any further effort to re-inscribe the city with bourgeois narrative gestures.⁶¹

Kiesler’s plans for the American Bauhaus—the proposed “American Institute for Industrial Design,” published in *The American Magazine of Art* in 1934, clearly demonstrated through its surface application of glass and steel Kiesler’s interest to make use of the modern materials of his time. [Fig. 2.25] He proposed an exterior of “interlocked and insulated monel metal” for the middle floors, a three story glass exhibition hall and museum display that “can be clearly seen by passers-by” for the entry floor, and a roof top “stamped steel, wall-framing sheet glass” for the upper floors. However Kiesler’s use of glass for display as demonstrated in his storefront and exhibition architecture makes apparent a critical shift in the means to which aura is generated which effectually undermines any effort to establish porosity. Aura is no longer specifically established through the tactile marking of time and memory on the surface of an aged material that could be “read off” through imaginative interpretation (“profane illumination”) as Benjamin

⁵⁸ Walter Benjamin, “Experience and Poverty,” in *Walter Benjamin: Selected Writings Volume II: 1927-1934*, ed. Michael W. Jennings (Cambridge: Harvard University Press, 1999) 734.

⁵⁹ Walter Benjamin, “Return of the Flâneur,” in *Walter Benjamin: Selected Writings Volume II: 1927-1934*, ed. Michael W. Jennings (Cambridge: Harvard University Press, 1999) 264.

⁶⁰ *Ibid.* 265.

⁶¹ Benjamin, “Surrealism,” 216. Benjamin, “Return of the Flâneur,” 265. Benjamin had hoped that without the ability to leave traces the aristocracy or bourgeoisie would be unable to possess and territorialize their property structures with the permanent memory and authority of their history thereby ensuring an emptied out image and material space for the new body politic of the masses.

discussed in his Surrealism essay. It is now made manifest through *anticipation* generated by the returning gaze of inanimate objects held back and encased behind a glass display window open to the street.⁶² In effect, the glass window works in contradistinction to the 20th century notion that it would ensure transparency, clarity, or as Benjamin had quoted Brecht—“Erase the traces!”⁶³ Porosity provided by a glass window—whether limited to the shallow spatial illusion of the surface depth of the display or open to the entire store on exhibition to the street—created distance of aura that can be covertly manipulated for mass consumer appeal. In Kiesler’s glass department stores of the late 1920s as well as his American Bauhaus scheme, display and exhibition tactics compromised desirable porous and transparent interior and exterior relationships.⁶⁴ [Fig. 2.26]

Clarity is no more guaranteed the naked eye behind a glass window than veiled behind a curtain. As Harry Francis Mallgrave argued in his introduction on Godfried Semper’s *The Four Elements of Architecture and Other Writings*, a veil can perform almost as a “ruse,” to provoke the meaning of a form unlike the promise of the “naked” truth that may only support pretension without apparent clues to detect meaning.⁶⁵ An idea that one cannot leave traces upon a material that is hard and cold such as glass and steel misinterprets what Benjamin himself realized about aura as clearly defined in his hashish writings and later confirmed in “On Some Motifs in Baudelaire”—that it is comprised of imagined ornamental images that are embodied or projected on the surface as a halo that surrounds all objects and beings—the “characteristic feature of

⁶² Aura existed for Benjamin as a semblance of the communication between two people; the “experience of...aura...rests on the transposition of a response common in human relationships to the relationship between the inanimate and animate or natural object and man. The person we look at, or who feels he is being looked at, looks at us in turn.” We feel aura sensuously as the *anticipation* of that interaction—that touch—that gaze. We project that anticipatory feeling onto inanimate objects—we psychically inscribe them with sensations and images, which we feel and experience. See Benjamin, “On Some Motifs in Baudelaire,” 338. For more on this aspect of aura, see Chapter 5. See also Hal Foster, *Compulsive Beauty* (Cambridge, Massachusetts: MIT Press, 1997), 196.

⁶³ Walter Benjamin, “Short Shadows II,” in *Walter Benjamin: Selected Writings Volume II: 1927-1934*, ed. Michael W. Jennings (Cambridge: Harvard University Press, 1999), 701.

⁶⁴ Even Kiesler’s use of steel symbolized modernism more as a billboard demarcating the surface character as advertisement for the American Bauhaus than it really served as a limit to archaic nineteenth-century notions of dwelling.

⁶⁵ Harry Francis Mallgrave, “Introduction,” in *Godfried Semper: The Four Elements of Architecture and Other Writings*, Tr. Harry Francis Mallgrave (New York: Cambridge University Press, 1989), 39.

genuine aura is ornament.”⁶⁶ Aura is not limited to the traces embodied on a material surface recorded in time for it is also effectually the ornament *projected* onto a surface as understood and manufactured through imaginative interpretation. Materials are used rhetorically and always embody images and produce material effects whether carved stone, soft wood, machine smooth steel or transparent glass; they always embody ideas whether or not understood, intended or desired. At times, Benjamin sought to limit the possibility to inscribe traces upon a material that afford the intimate relics of Bourgeois security and livelihood. At other times Benjamin realized that it is not the material that embodies images and ideas, but the projection of the imagination in response to memory—the promise of the hermetic (magical) tradition—that marks meaning as a breathy halo upon objects of desire. A mark or inscription is merely a scratch upon a surface without the projected meaning interpreted in response to that action. It is the imagined interpretation of a sensation of memory associated with an object that defines history and meaning—that gives matter its sonic voice.

As glass with its phantasmagoric properties of reflection and refraction of color and light only proved to be an excellent material to project an illusory casing of inexplicable wonder that establishes auratic distance through covert synaesthetics, the role of the *flâneur* may not be entirely obsolete in a modern world of glass and steel as might be assumed. As Benjamin discusses in the “Return of the *Flâneur*” the “perfected art of the *flâneur* includes a knowledge of ‘dwelling,’ and as “the primal image of dwelling...is the matrix of shell—that is, the thing which enables us to read off the exact figure of whatever lives inside it”—to read off the “atmosphere” surrounding bourgeoisie life, in the casings of their objects, homes and everyday city life may be still necessary to support the promise of a new political life.⁶⁷ What a casing is however has to some extent evolved throughout the 20th century—dwelling is no longer readily apparent in the physical markings upon a material surface of the architectural body but instead through projection upon or associated with the architectural body through multi-media. Benjamin was not wrong to want to explode the “atmosphere concerned in these things” to release objects and architecture

⁶⁶ Walter Benjamin, “Hashish, Beginning of March 1930,” in *Walter Benjamin: Selected Writings Volume II: 1927-1934*, ed. Michael W. Jennings (Cambridge: Harvard University Press, 1999), 328, 329.

⁶⁷ Benjamin, “Return of the Flâneur,” 264.

from their encasement of imagined history and memory as a means to politicization that can be maintained with continued “organization,” “pessimism,” and “mistrust.” However unlike Adorno and Kracauer he was perhaps too enamored by the promise of new media experienced in a state of distraction to realize how easily society might adapt its technology to advance covert mechanisms of control.⁶⁸

Adorno and Kracauer realized to some extent the potential shortcomings of new media technology used in capitalist markets. Adorno was critical of the shifts in the music industry as Kracauer was concerned for cinema. Aesthetic politics which made use of distractive techniques were observed by Adorno to “generally have no real consequences, smoothly insinuating themselves into the episodic action.”⁶⁹ Political life was only slightly altered by “revolutionary [aesthetic] tactics” which were all too easily utilized by the mass advertising market similar to what Kiesler had accomplished with his shop window designs. With every new tactic, the market learned to adapt to absorb every artistic gesture for its own benefit seamed over by the “endless” flux and flow of an evolving evermore-exciting contemporary capitalist culture. Adorno’s lament, in response to this effect on music, applies equally well to mass media in general:

But what are emancipated from formal law are no longer the productive impulses which rebelled against conventions. Impulse, subjectivity and profanation, the old adversaries of materialistic alienation, now succumb to it...The representatives of the opposition to the authoritarian schema become witnesses to the authority of commercial success...the listener is converted, along his line of least resistance, into the acquiescent purchaser. No longer do the partial moments serve as a critique to the whole; instead, they suspend the critique which the successful aesthetic totality exerts against the flawed one of society.⁷⁰

Whether naive or blindly optimistic, modern artists who sought to promote freedom and revolution through aesthetics were ultimately challenged by the “authority of commercial success” that sought to use their own skillfully idealized techniques for profit, gain and control. Criticality was seamed over to facilitate the acquiescence of the purchaser through techniques of modern art through covert means of mass media. We have become unconsciously driven through autonomic

⁶⁸ Benjamin, “Surrealism,” 216.

⁶⁹ Theodor W. Adorno, “The Schema of Mass Culture,” in *The Culture Industry: Selected essays on mass culture*, ed. J.M. Bernstein (New York: Routledge Classics, 1991) 69.

⁷⁰ Theodor W. Adorno, “On The Fetish Character in Music and the Regression of Listening,” in *The Culture Industry: Selected essays on mass culture*, ed. J.M. Bernstein (New York: Routledge Classics, 1991) 32.

habits induced through what Kracauer describes as “American distraction factories” to respond with reflex action not only to avoid the dangers of everyday modern life, but to be driven to habitually consume in a constant state of distraction. We have been trained to respond to the intensifying demands of an ever-evolving consumerist society with less and less critical attention and more and more physical action. “Shock effects” were never really successful in the effort to achieve mass revolution but instead became the everyday tactics of mass consumer manipulation that have significantly benefited capitalist society.

The Movie-House

Concerned with the complicity with which Kiesler used the applied arts and new projective technology to instigate covert mechanisms of control through synaesthetic tactics in his shop window and department store projects—I would like to briefly discuss one built work which brought his storefront cinematic tactics to bear on the actual presentation of film in relation to architectural practice. In the same years, Kiesler was designing his department store schemes and window display designs he also received a significant commission to design the new Film Arts Guild Theater for 52 West 8th Street in New York City. In his theater projects, he was able to develop his interests to move people to engage contemporary technology through artistic tactics from the street to an interior illusionary atmosphere. As in the glass department store designs where the exterior used material effects to create new electric and potentially electronic space, for the Film Arts Guild Theater, Kiesler designed a new form of movie house that rethought how film would be accessed and presented to the masses.

To attract and lure the viewer off the street and into the movie house, Kiesler used the applied arts (*Kunstgewerbe*) with similar techniques as suggested for his shop window designs. The exterior façade of the theater house seamed together an asymmetrical rhythm of windows doors signage display and vertical and horizontal ornament using Dada and *de Stijl* tactics to draw the attention of the modern city dweller and pull them towards a demarcated entry. Inspired as he suggests by the *Café De Unie* of J.J.P Oud in Holland, Kiesler utilizes what he terms the

“psycho-function” of architecture through lines, planes and forms as well as different color juxtapositions and materials to achieve his effect. [Fig. 2.27, Fig. 2.28] For as he suggests,

glass has a different psychological effect from leather, wood from metal. The same applies, of course, to color schemes. Function and efficiency alone cannot create art works. ‘Psycho-function’ is that ‘surplus’ above efficiency which may turn a functional solution into art. The front of this motion picture house is conceived of black and white opaque glass. The design as it spreads from the inside of the building into the front moves in an asymmetric rhythm, emphasizing the purpose of the building as a home of moving pictures.⁷¹

Using opaque glass and transparent framed windows set in linear composition, Kiesler had hoped the façade would make very clear that this was a house of film designed to move the eye intensively back and forth in an asymmetric rhythm. [Fig. 2.29] As is clear from images of the lobby—linear patterns and soffits of the ceilings, floors, and walls move the spectator’s eye through rhythm and speed in a constant state of distraction. [Fig. 2.30, Fig. 2.31, Fig. 2.32] The body automatically follows the rhythm in motion down the hall and into the theater or back out into the street. Through the image space the body space can be controlled and manipulated. What we politely call “way-finding” signage—the tactics of advertising and design—Kiesler utilized to lure and motivate through “tactile quality” of “habit” the audience to assume the position in front of the screen where focused attention set to the rhythm of distraction with illusory affect performs to expand the limits of the architectural body. [Fig. 2.33] Cinema and life effectively would begin to lose their distinction in one continuous spatial atmosphere.

The Film Arts Guild Theater performed to motivate the audience to concentrate attention upon the screen for the duration of the film and not become distracted during the event, as concerned Kracauer in his essay on “The Mass Ornament.” Kiesler writing in 1929, as likely influenced by Kracauer, realized the necessity to rethink the movie-house as opposed to the theater-house for as he suggests, “architecturally, there is an enormous difference between the theater and the cinema. The cinema has all interests concentrated on a single point of two dimensions, while theatre must have the interest dispersed in three dimensions.”⁷² Kiesler was

⁷¹ Kiesler, *Contemporary Art Applied to the Store and its Display*, 87.

⁷² Frederick Kiesler, “Building a Cinema Theatre (1929),” *Frederick J. Kiesler: Selected Writings*, ed. Siegfried Gohr and Gunda Luyken (Verlag Gerd Hatje, Ostfildern bei Stuttgart: Germany, 1996) 16.

opposed to traditional movie houses that replaced the proscenium stage of theater with a movie screen while still maintaining the look of a theater house. The argument he presented focused on the concept that the three dimensional “real” space of the theater had been replaced by a two dimensional screen for film and

while in the theatre each spectator must lose his individuality in order to be fused into complete unity with the actors. In the cinema which I have designed for the Film Arts Guild is this most important quality of the auditorium its power to suggest concentrated attention and at the same time to destroy the sensation of confinement that may occur easily when the spectator concentrates on the screen.⁷³

To obtain “unity” within the theater, unlike cinema, was to create continuity with the actors and the theater stage luring you inside—literally—the action of the event as the actors held back on stage permit the audience to approach and become absorbed into their art. Now, however as Kiesler remarks,

film has grown mature enough to create its own form of architecture which must signify 100 per cent cinema. Our age is an optical one. The rapidity of events and their brief duration require a recording apparatus that can register as speedily as possible. It is the eye. The speed of light waves exceeds that of all other waves. The film is the optical flying machine of the camera.⁷⁴

As the individual’s eye is concentrated on the rapid movement of the images on the screen, a new environment is needed, that can “concentrate attention” (contraction) and at the same time “destroy the sensation of confinement” (expansion). This effect Kiesler argued could occur in his Film Arts Guild Theater as the action of the film makes its way towards the individual who takes the critical position of the camera.

Seated before the film, manufactured and designed for reproducibility, the viewer assumes the intimate position of the camera informed by the new vision of the optical unconscious with techniques as Benjamin suggested of “tenth of a second” “closely-expanded space,” and “slow motion-extended movement.”⁷⁵ Enveloped, according to Benjamin, in “the most intensive interpenetration of reality with equipment” one intimately experiences the events situated on film from the safe empowered critical position of their seat without intimidation

⁷³ Ibid. 17.

⁷⁴ Ibid. 17.

⁷⁵ Walter Benjamin, “The Work of Art in the Age of Its Technological Reproducibility,” 11.

manifest by the aura of a distant authoritative presence.⁷⁶ From the contrived position of intimacy without intimidation perception would be theoretically enhanced by the non-human perspective of the detailed mechanically reproduced media experience of artistic reality, which leads to a more critically engaged mass. Film as envisioned by Benjamin and perhaps Kiesler could put “the public in the position of critic” as “an examiner, but a distracted one” inciting the viewer to a conscious “presence of mind.”⁷⁷

In Kiesler’s cinema, the spectator as he discussed would now “be able to lose himself in an imaginary, endless space even though the screen implies the opposite.”⁷⁸ Kiesler attempted to eliminate any reference to the proscenium stage, its curtain or platform, by offering a new “screen-o-scope.” [Fig. 2.34] Kiesler’s stage curtain resembled the aperture of a camera, although not entirely circular—more split in two—similar to the lids of an eye that opened and closed to allow more or less screen to become visible as needed. [Fig. 2.35] In addition, instead of using only one screen, Kiesler made vital the surfaces of the ceiling and walls to serve ideally as projection areas that enhanced the illusory atmosphere. Surrounding the screen with lighting effects that directed the eye towards the action as Kiesler argued, “interior lines of the theater...focalize[d] to the screen compelling unbroken attention on the spectator” in a completely blackened room. The intention here was different than the all encompassing “unity” intended by his earlier stage projects. Now Kiesler provided for an immobile, secure, yet unconfined and quiet spectator to be enveloped within the image screen in a state of distraction—individually—yet amongst others, in the ideal cinema, as “the ideal cinema is the house of silence.”

Contraction and expansion of the field of vision provides the illusion of a flexible spatial environment that can extend beyond the confines of the architectural limits set by inherent physical barriers. Kiesler’s 1920s designs exploded the limits of traditional architecture to achieve continuity between the street life and interior life of modern dwelling. His storefront projects sought to extend to incorporate the entire exterior surface of his buildings with dynamic illusory affect, while his cinema and theater projects sought to expand the entire interior atmosphere. All

⁷⁶ Ibid. 10.

⁷⁷ Ibid. 12, 13.

⁷⁸ Kiesler. “Building a Cinema Theatre (1929),” 17.

these projects had the same intention, to organize spaces of control. The interior and exterior surfaces effectually met at the limit of the architectural body as a skin *modulating* interior life separate from city life that could then expand through the illusory promise of a new porous architecture to erase the memory and history of bourgeois life through the hope of new modern glass and steel materials. However this surface becoming ever more “elastic” “porous” and “atmospheric” seemed only to further employ tactics of display, advertising, and mass media that manipulate the habits of everyday life until we become ever more comfortable assuming our position before the cinema screen. We are ever more convinced we are individuals making our own choices and yet in this media induced *virtual* state of distraction in which conscious attention has become so well entertained we may have lost sight of the habits of our actions.

3. Research Practice: The Design-Correlation Laboratory

Confinements are molds, different moldings, while *controls* are a *modulation*, like a self-trimming molding continually changing from one moment to the next, or like a sieve whose mesh varies from one point to another.

Gilles Deleuze

A shift in control structures had occurred in the early 20th century that accelerated rapidly after the Second World War according to philosopher Gilles Deleuze.¹ Disciplinary systems that operated in the confined spaces of 18th and 19th century schools, prisons, and workplaces for example, had broken-down in the face of new invasive and subversive organizational networks that Deleuze described as *control societies*.² The “*correlation of the body and the gesture*” manufactured in the disciplined habits of schoolchildren, military cadets, and working subjects as Michel Foucault had studied for example, evolved into more seamless autonomic behaviors of desiring bodies shifting in response to complex *modulated* open systems in the service of mass control.³

Disciplinary networks, according to Deleuze, had adapted to the temporal needs of a constantly changing advanced capitalist society.⁴ Businesses had begun to replace factories, as numbers, codes, and digits substituted for individuals.⁵ Continuing education and continuous assessment were the clear signs Deleuze observed of this shift away from disciplinary practices towards more flexible systems of control.⁶ Education had become a business which concerned him,

¹ Gilles Deleuze, “Postscript on Control Societies,” which first appeared in *L'Autre journal*, no. 1 (May 1990), and included in *Pourparlers* (Paris: Editions Minuit, 1990), and OCTOBER 59, Winter 1992, MIT Press, Cambridge, MA, 3-7; English translation: *Negotiations: 1972-1990*, tr. Martin Joughin (New York: Columbia University Press, 1995). 178.

² Ibid.

³ Michel Foucault, *Surveiller et Punir: Naissance de la prison* (Paris: Editions Gallimard, 1975) ; English translation: *Discipline & Punish: The Birth of the Prison*, tr. Alan Sheridan (New York: Vintage Books Edition, 1979) 152; italics in original. See also Deleuze, “Postscript on Control Societies,” 178-179.

⁴ Deleuze, “Postscript on Control Societies,” 179.

⁵ Ibid. 179-180.

⁶ Ibid. 182.

that taught habits of mind and body to perform competitive services that could meet the fluid ever-changing demands of dynamic mass markets.⁷ Habits and perceptions became the focused study of examination for endless instruction towards controlling human behavior.

As philosopher William James had already observed at the turn of the 20th century—“behavior...to a great extent [is]...the result of education.”⁸ “Habit” is societies’ “most precious conservative agent,” he argued, “it alone keeps us...within the bounds of ordinance,” and “dooms us all to...the lines of our nurture or early choice.” (PP 121) In James’ formative studies into the *Principles of Psychology*, he advised with good intention to educate human nature to the habits of multiple actions through “continuity of training” that he believed encouraged new motor effects and free habits of will. (PP 123) James had observed that if we research, study, and learn to challenge everyday habits that are the outward expression of our autonomic nervous system, we could evolve in response to changing environmental parameters. “The great thing, then, in all education, is to *make our nervous system our ally*,” he proposed. (PP 122) James suggested techniques to study the habits of mind and body in hope to evade static natures of *discipline* and *control*. Similar to James, Kiesler was very interested in the study of human behavior and perception; he was an avid reader of James’ theories on brain-activity, habits, nerves, education, and the environment. He held James’ books *The Energies of Man* and both volumes of the first edition of *Principles of Psychology* in his library.⁹ Interested as in education since the 1920s, Kiesler applied inventive techniques from the behavioral sciences to educate architects to satisfy the continuously changing needs of human dwelling.

⁷ Ibid. 181.

⁸ William James, *The Principles of Psychology* (2 vols.) (New York: Henry Holt, 1890: rpt. New York: Dover Publications, Inc., 1950) 104 (hereafter cited in text as PP for Volume 1 and 2PP for Volume 2).

⁹ Kiesler held in his library: William James, *The Energies of Man* (New York: Muffat, Yard and Company, 1911). William James, *Principles of Psychology* (New York: Henry Holt, 1923). William James, *Psychology*, 2 vols (New York: Henry Holt, 1890). See Lillian Kiesler, “Personal Library of Frederick Kiesler,” compiled by Lillian Kiesler 1993, Frederick Kiesler papers, 1923-1993, 112-114, Smithsonian Archives of American Art, New York. Original library of books held at the Austrian Frederick and Lillian Kiesler Private Foundation Archive, Vienna (hereafter referred to as Kiesler Archive, Vienna). There is little or no marginalia in these books and it is unclear when specifically Kiesler acquired these texts, unless otherwise noted.

Kiesler was not interested in traditional disciplinary approaches to architectural education however. He instead supported a radical and seemingly more liberal design pedagogy that he hoped would contribute to an evolution in architectural design education. Kiesler replaced the study of static constructions with those of responsive systems that aimed to achieve *endless modulation*.¹⁰ Unaware of Deleuze's concern for advancing *control societies*, Kiesler studied and taught how to construct architectures correlated to temporal environments through an avant-garde approach to education. His pedagogical practice began with an interest to teach theater in the 1920s that elaborated into a powerful educational research agenda for architecture he widely professed by the 1940s.

Architecture Education

"Architectural education's primary purpose is to teach students to think for themselves," declared architect Frederick Kiesler at the Conference on Coordination in Design held at the University of Michigan, March 8, 1940.¹¹ Kiesler's pedagogical statement met with stunned silence in the room. He had suggested a radical departure from opinions held by colleagues Walter Gropius, Moholy-Nagy, and Eero Saarinen who strongly favored teaching manual training, material knowledge, and universal principals of design.¹² Kiesler instead supported educating students with a broad scientific approach to problems through innovative laboratory research that might generate new modes of independent and creative thinking. He was not interested in teaching students acritical design methodologies that merely support static standards and accepted ideals. He even had the temerity to suggest that architecture students avoid copying modern European architecture as fervently as modernists insist they avoid copying historical

¹⁰ Deleuze refers to an *endless postponement* in constantly changing control societies in his example of Kafka's *The Trial*. See Deleuze, "Postscript on Control Societies," 179. For further discussion on the endlessness in writings by Deleuze, see also Deleuze, *Le Pli: Leibniz et le baroque* (Paris: Les Editions de Minuit, 1988); English translation, *The Fold: Leibniz and the Baroque*, tr. Tom Conley (Minneapolis: University of Minnesota, Press, 1993), particularly Chapter 1.

¹¹ Frederick Kiesler as surmised by Kenneth Black of *The Weekly Bulletin*, University of Michigan, as reprinted in "The Ann Arbor Conference," *Pencil Points*, March 1940, 70.

¹² *Ibid.*

styles.¹³ Mesmerized by Kiesler's proposition, conference committee Dean Wells Bennett of the University of Michigan, Dean Joseph Hudnut of Harvard Graduate School of Design, and Director Walter Baermann of the California Graduate School of Design unanimously adopted Kiesler's vision as a promising new direction for architectural and industrial design education.¹⁴

The conference committee organized the meeting in Ann Arbor as a serious attempt to establish a fundamental educational background for architects and industrial designers in the United States. Prior to the 1930s, American architects received formal education through Beaux-Arts training in universities, a combination of theory and practice in polytechnic institutions, or through the fine arts in academies.¹⁵ With the influx of European émigrés to America during the Second World War, architecture education evolved to incorporate broad coordinated curriculums that organized art, technology, and theory with the fine arts, applied arts and building crafts—into complex fields of knowledge. Modern European approaches to architecture education, most

¹³ Ibid.

¹⁴ Ibid. 68. Walter Baermann directed the California Graduate School of Design, which was the Industrial Design Engineering Department of the California Institute of Technology (Caltech) in Pasadena California. Also of interest, Kiesler received several letters following the Ann Arbor conference in support of his ideas:

“Following the Conference we have been discussing various points that came up then and a number are much interested in your ideas as to laboratory study on Design-Correlation. I myself have read your opening statement several times and believe it to be extremely sound. [...] Do you see your Laboratory on Design-Correlation as a continuing activity there at Columbia? Of course you would have a similar lesson to give to each beginning group, but I am imaging that in addition to this you hope to pursue your research further. [...] It seems to us that there is something in this research approach which we might profitably explore here at Michigan. I think perhaps it would be different than with you and might still have a value for us. I should be very glad to have your comment at this time. See letter of Dean Wells Bennett to Kiesler, March 8 1940, Laboratory for Design Correlation, REC 10 Box, Third folder unmarked, Kiesler Archive, Vienna.

“The report that I read of this occasion appeared in the Bulletin of the Michigan Society of Architects and stated that a Mr. Kiesler apparently from your School of Architecture at Columbia, completely routed the radicals by the simple statement that he believed that architectural education's primary purpose was to teach students to think for themselves. His courage and initiative in taking this step under such circumstances and the complete success of his move in doing so commanded my admiration... See letter from William Emerson FAIA Architect to Dean Arnaud Columbia Univ. RE: the Michigan Conference, Boston May 6 1940, Laboratory for Design Correlation, REC 10 Box, Third folder unmarked, Kiesler Archive, Vienna.

¹⁵ For more on architectural education in America, see Joan Draper, “The Ecole des Beaux-Ars and the Architectural Profession in the United States: The Case of John Galen Howard,” and “Joseph Esherick, Architectural Education in the Thirties and Seventies: A Personal View,” in *The Architect: Chapters in the History of the Profession*, ed. Spiro Kostof (New York: Oxford University Press, 1977) 209-280. See also Ulrich Pfammatter, *The Making of the Modern Architect and Engineer: The Origins and Development of a Scientific and Industrially Oriented Education*, tr. Madeline Ferretti-Theillig (Boston: Birkhäuser, 2000).

notably formed under Walter Gropius at the Bauhaus in Berlin, took hold of the most prestigious institutions in the United States. The Ann Arbor conference served as a sounding board for the most prominent proponents of modern design pedagogy.

Although a marginal figure in education, Kiesler's emphasis on architectural intelligence, process, and research methods over the training of rote skills, techniques, and autonomic procedures carried enormous value. Columbia University School of Architecture Dean Leopold Arnaud originally invited Kiesler to participate at the Ann Arbor conference in light of Kiesler's innovative teaching methods. As a visiting professor at Columbia University School of Architecture since 1936, Kiesler avoided the meaningless production of repetitive simulacra typically generated in schools of architecture by adapting the studio environment into an intensive research laboratory.

Employing a multi-disciplinary approach in his Laboratory of Design Correlation from 1937 to 1941, Kiesler creatively expanded upon the role of architectural education to employ diverse fields of knowledge. Kiesler and his students engaged historic, theoretic, and technical investigations to formulate design variation. They researched and examined case studies, read philosophic and scientific texts, analyzed planning relationships, and built working prototypes. Through diverse and intensive explorations, Kiesler challenged his students to develop innovative organizational strategies and research procedures to invent new morphological systems that could adapt to evolutionary changes in societal and bodily habits.

Kiesler organized assignments and lectures to examine how architecture could affect spatial perception and coordinate everyday habits through vision and touch. Students studied late 19th and early 20th century uses of the time-motion study, and applied their research to formulate design methodologies that incorporate changing and varied psychological and physiological parameters. The laboratory invented new ways to *modulate* the built environment in response to multiple spatial habits of a perceiving body in motion situated and evolving through time. Their forms were designed to be elastic—mobile and flexible—able to expand and contract to perform multiple tasks that could satisfy the psychological and physiological needs of dwelling.

Theater Laboratory

Kiesler began his educational career teaching theater arts in New York City in 1926.¹⁶ At the International Theater Exhibition, he announced his plans to form the new Brooklyn International Theater Arts Institute to train students to the spirit of popular theater.¹⁷ As the scenery of the old school theater was “born in the spirit of Imperialism,” Kiesler declared, “we will [instead] create a theater for the masses, [and] approach... the project by all paths”. (LMS 15) According to the *New York Times*, Kiesler’s Theater Institute would be a “Laboratory of Modern Stage...to Exemplify Democracy”. (LMS 15) It would incorporate diverse viewpoints from a vast network of modern interests expressed at the International Theater Exhibition.

“I will build a laboratory of the modern stage, and the faculty of this institution will have three chairs—psychological, scientific and artistic,” Kiesler explained. (LMS 15) Organized under director Kendall K. Mussey, the three department heads included Princess Maria Carmi Matchabelli, Dr. Bess Mensendieck, and Kiesler. Matchabelli would teach the study of psychology, Mensendieck would provide the science, and Kiesler would contribute both artistic and scientific laboratory research to the curriculum. (LMS 15) As explained in their program, the

¹⁶ The New York Theater Guild supported Kiesler’s trip to the United States for the International Theater Exhibition. Kiesler sailed on *Leviathan*, Jan 19, 1926 to New York with forty large boxes for the exhibition. Maurice Langer of the Theater Guild had made the arrangements. The Theater Guild had produced the R.U.R. on Broadway two years prior and were familiar with Kiesler’s work. See “Kiesler Sailing For America: Theatre Modernist is to Leave Jan. 19,” *Paris Times*, 9 January, 1926, Frederick Kiesler Papers, microfilm reel 127, Smithsonian American Archives of Art, Washington D.C. See also “America to get ‘People’s’ Theatre: Kiesler of Vienna, Will Sail Soon to Exhibit Novel Creation”, *The New York Herald*, Saturday January 9, 1926, Frederick Kiesler Papers, microfilm reel 127, Smithsonian American Archives of Art, Washington D.C. In 1940, Kiesler would attempt to recover the rest of his belongings, which had been stored in Vienna. These boxes included drawings and sketches of his student works prior to 1926 including: drawings of the human body, landscapes in different techniques, sketchbooks, woodcuts, etchings, lithographs, etc. He may have been able to get these items shipped to Switzerland, but they never arrived in the United States. See letter Frederick Kiesler to Mr. M.S. Henderson, British Consulate General, October 28, 1940, Frederick Kiesler Papers, Box 4 of 7, Correspondence 1940 Folder, Smithsonian American Archives of Art, Washington D.C.

¹⁷ Kiesler’s Theater Institute bore similar political intentions to the Constructivists, although Kiesler denied it exemplified Soviet ideals. Charles Recht, attorney for the representatives of Soviet Russia, translated Kiesler’s announcement into English before the press, and in light of his affiliation and Kiesler’s remarks a debate over Kiesler’s political intentions for the theater were discussed in the *New York Times*. See “Plans Laboratory of Modern Stage: Former Vienna Director Says He Will Develop “Fourth-Dimensional Theatre To Exemplify Democracy – Psychological, Scientific, and Artistic Instruction Will Be Given,” *New York Times*, 15, March 1926, Frederick Kiesler Papers, microfilm reel 127, Smithsonian American Archives of Art, Washington D.C.; (hereafter cited in text as LMS).

International Theater Arts Institute coordinated to educate actors and designers to “express every character of every age and every type of individuality,” with “a new vitality – the vitality of our time, the ‘electric era’.”¹⁸ Through “careful research and analysis,” students and faculty challenged to work together to “develop the power of the methodical will to modify and multiply human forces.”¹⁹ The Institute supported practices focused on the design and construction of theater for multiple actors to train to express the electric dynamism of contemporary life.

As the Theater Institute developed, it formed multiple departments. Matchabelli taught Acting, Expression, Improvisation, and Pantomime; Kiesler took charge of Stagecraft and Theater Architecture; Edwin Strawbridge, and Alexandra Gavrillov taught Ballet and Social Dance; John Mason Brown lectured on the History of the Theater, and Dr. Mensendieck contributed to the study of Body Education.²⁰ Ralph Jonas, president of the Brooklyn Chamber of Commerce donated the house at the corner of Remsen and Henry streets for the Institute.²¹ Charged “to develop artistic personality for all the arts related to the theatre... ‘Research’, rather than ‘lessons’ ... [became] the important road to knowledge,” Jonas explained.²² The Institute would be a “place of collaborative experience between teachers and students,” Mussey agreed, as an alternative approach to traditional theater education.²³

Kiesler collaborated primarily with Matchabelli and Mensendieck to define the Theater Institute program. In his courses Kiesler planned to teach the “study of the antique” as the “basis for the development of the modern theatre.” (IT 6) His students would research traditional theater designs in order to best form modern ideas. They would study Opera and Vaudeville sets, paint

¹⁸ “Princess Matchabelli Speaks for the International Theatre Arts Institute,” Speech at the Independent Theatres Dinner, October 3, 1926, Frederick Kiesler Papers, microfilm reel 127, Smithsonian American Archives of Art, Washington D.C.

¹⁹ Ibid.

²⁰ “International Theatre Arts Institute,” official course description and program, n.d., n.p., 4, Kiesler Archive, Vienna; (hereafter cited in text as IT).

²¹ “Brooklyn House offered for Theater,” *New York Times*, Aug 18, 1926. As held in the Frederick Kiesler Papers, microfilm reel 127, Smithsonian American Archives of Art, Washington D.C.

²² “Ralph Jonas Gives House to Theater Arts Institute,” *New York Harlem* [?], August 14, 1926. As held in the Frederick Kiesler Papers, microfilm reel 127, Smithsonian American Archives of Art, Washington D.C.; my emphasis.

²³ Kendall Mussey, as quoted by Marjorie Dorman, in “Princess Maria Matchabelli To Give Dramatic Art Course At New Theater School Here,” *Brooklyn Eagle*, undated clipping. As held in the Frederick Kiesler Papers, microfilm reel 127, Smithsonian American Archives of Art, Washington D.C.

and model interiors and exteriors of houses and streetscapes, and manufacture plans and models for stage direction. (IT 6) Kiesler's courses appeared very pragmatic in comparison to his colleagues.

Matchabelli whose stage career began under Max Reinhardt in Vienna, was renowned for playing the Madonna in the *The Miracle* in Germany, London, and New York. She contributed theories on psychoanalysis and auto-suggestion to the Institute's acting department. (IT 5) As she described in the official program:

one becomes an actor by using his inborn unconscious talent consciously; by modeling it into an art through the training of the entire human instrument of the brain, soul, and body. These elements must be brought to a true *co-relation* which is the purpose of these courses.²⁴

Matchabelli believed acting is an art of *co-relation* between the unconscious and conscious—brain, soul, and body; it is an art modeled through training. Her interests in the relationship between the unconscious and conscious, and the body's ability to express affectations became common themes Kiesler would later develop in his research practice.

As they worked together, Matchabelli had enormous influence on Kiesler. She provided him with vital reading material that supplemented his Viennese interests in Goethe and Freud. Kiesler had several books in his library related to Matchabelli's interests. He held *Suggestion and Auto Suggestion* by Charles Baudouin and *Suggestive Therapeutics* by H. Bernheim, alongside *Psychology* by J.R. Angell and *Physiography* by T.H. Huxley.²⁵ In addition, Kiesler studied recommended texts by Matchabelli on electricity, magnetism, cyclical theory, space-time, and

²⁴ (IT 6); my emphasis.

²⁵ See J.R. Angell, *Psychology* (New York: Henry Holt, 1890); Charles Baudouin, *Suggestion and Auto Suggestion* (New York: Dodd, Mead & Company, 1922); H. Bernheim, *Suggestive Therapeutics* (New York: G.P. Putnam and Son, 1889) and T.H. Huxley, *Physiography* (New York: FRS Appleton, 1892). Other similar themed books Kiesler had with copyright dates prior to 1926 in his library included: C.W. Leadbeater, *Dreams* (Los Angeles: Theosophical Publishing Company, 1918); L.W. Rogers, *Dreams and Premonitions* (Chicago: Theosophical Book company, 1923); Otto Weininger, *Geschlecht und Charakter* (Wein: Wilhelm Braumuller, 1925); C. Lloyd Morgan, *Instinkt und Erfahrung* (Berlin: Verlag Julius Soringe, 1913); Erwin Rohde, *Psyche* (Tubingen: Verlag von J.C.B. Mohr, 1921); Sigmund Freud, *Vorlesungen zur Einfuhrung in die Psychoanalyse* (Leipzig: Institute Psychoanalytischer, 1922); I.M. Bentley, *The Field of Psychology* (New York: D. Appleton & Company, 1924); W. Mc Dougall, *An Introduction to Social Psychology* (London: Methuen & Company, 1924); Wilhelm Bolsche, *Das Liebesleben in der Natur* (Jena: Diederichs, 1910); E. Wichmann, *Fortpflanzung und Zeugung* (Stuttgart: Kosmos, 1907); and René Guénon, *L'Homme et son Devenir Selon le Vedantu* (Paris: Denibel et Steele, 1925). See Lillian Kiesler, "Personal Library of Frederick Kiesler," 112-126.

continuity published by Walter Russell, Einstein and others.²⁶ Contracting and expanding universal principles of degenerative and regenerative vital energy forces—balancing in dramatic states of comfort and discomfort became powerful themes Kiesler elaborated throughout the 1930s.²⁷ [Fig. 3.1, Fig. 3.2, Fig. 3.3, Fig. 3.4]

Teaching alongside Dr. Mensendieck, Kiesler became familiar with her theories and studies of the human body. Mensendieck was a leading authority on scientific physical culture related to human anatomy, biology, rhythm, motion, and dance. (IT 12) Mensendieck was an American who studied sculpture in Paris. She moved to Zurich to study medicine in order to become “a sculptor of human flesh” instead of inanimate material. (IT 12) Mensendieck published her work in Germany on the correct postures of the female anatomy. Her research aimed to vitalize the human body by combating faulty habits and retraining body structure to perform intelligent gestures and graceful movements.²⁸ [Fig. 3.5] Mensendieck taught her course daily at the Institute, as she said “in order to express the innate unconscious talent consciously.” (IT 7) For as she believed,

we need the vehicle of a body unhampered in its ‘physiologic rhythm.’ To attain such perfection of the bodily instrument as a willing executor of the psychic urge, the pupil is taught the very composition of the human body and also the laws of nature which govern movement. This course includes instruction in anatomy, physics and function of the muscles which means nothing else than the inner workings of motion; analysis of movement, synthesis of movement, knowledge of how to distribute the body masses in space, how to reduce expansion of movement, how to comprehend the origin of and how to develop the sequence of motion. (IT 7)

Mensendieck aspired to analyze the moving body to prescribe to her pupils how best to express themselves autonomically. Later recognized for “improving the muscle – automatism...used for

²⁶ See Walter Russell, *The Russell Genero-Radiative concept or the Cyclic theory of Continuous Motion* (New York: L.Middleditch Co., 1926; revised, 1930) As held at the Kiesler Archives, Vienna. “To one who knows, to whom the Light is shining clear and is not hidden behind that veil which man calls darkness, To Princess Matchabelli who has today that name, but is to me nameless, and has been for ten times ten thousand years and for ions hence – for Light knows Light as Light – and Light is as nameless as it is dimensionless—From her friend who, today is Walter Russell [signed original]”; Kiesler kept Princess Matchabelli’s original signed copy in his library.

²⁷ Ibid.

²⁸ See Bess M. Mensendieck, *It’s Up To You* (New York: Mensendieck System, 1931)

performing everyday movement so...their effect upon the body architecture [would]... be constructive," the Mensendieck System became very influential in Europe and America.²⁹

Mesendieck's interest in the "elastic" capacity of joints and muscles to move in "physiologic rhythm" became important studies for Kiesler.³⁰ [Fig. 3.6] Mesendieck observed that "Control of the Delineation and Extent of Movement in Space" of the body created "beauty of contour" and "economy of energy" in everyday body movements.³¹ Mesendieck systematically studied the relationship between the autonomic nervous system and body action to produce optimal movement and efficient gesture. Although, Kiesler was not involved in the Brooklyn Theater Institute for long, he would later use similar ideas to Mesendieck in his Design-Correlation research laboratory at Columbia University.

According to Mussey, Kiesler only taught at the Theater Institute during the season from 1926 to 1927.³² Kiesler did however continue to lecture at other arts and theater institutions over the next few years. According to President Egmont Arens of the American Union of Decorative Artists and Craftsmen (AUDAC), Kiesler taught at the AUDAC from 1928 to 1929 as a lecturer on Modern Architecture.³³ The AUDAC was a loose association of architects, artists, and designers working for varied commercial organizations, firms, stores, and manufacturing establishments in

²⁹ Bess M. Mensendieck, *The Mensendieck System of Functional Exercises: For educating the musculature according to the mechanical laws that underlie its operation, and for improving the muscle-automatisms that are used for performing every day movements, so that their effect upon the body architecture may be constructive*, Vol 1 (Portland, Maine: The Southworth-Anthoensen Press, 1937). Professor Stephen Leet recently argued the Mensendieck System informed Richard Neutra and his design for the Miller House in Palm Springs, California, 1936. Miller taught the Mesendieck System from her home, and Neutra incorporated a Mesendieck exercise studio in the Miller house; See Stephen Leet, *Richard Neutra's Miller House* (New York: Princeton Architectural Press, 2004).

³⁰ Mensendieck, *It's Up To You*, 33, 90.

³¹ *Ibid.* 33; emphasis in original.

³² It is unclear how long the Brooklyn Theater Institute survived. The Institute opened October 11, 1926 at 102 Remsen Street, and held an honorary banquet in the Ball Room of the Hotel Astor on October 3rd for well over a hundred guests. For a complete list of those in attendance at the banquet see "Ladies and Gent – Is Silent for Once: Diners at Independent Theatre Clearing House Function Can Take Speeches or Leave 'Em," *The World*: Monday October 4, 1926. 3, held in the Frederick Kiesler Papers, microfilm reel 127, Smithsonian American Archives of Art, Washington D.C.

³³ Letter from Edgmont Arens to Kiesler, May 22, 1930, Frederick Kiesler Papers, Box 4 of 7, Correspondence 1930-1932 Folder, Smithsonian American Archives of Art, Washington D.C.

support of industrial, decorative and applied arts.³⁴ Membership included Kiesler, Arens, Harvey Corbett, Geddes, Frankl, Douglas Haskell, Albert Kahn, Eliel Saarinen, Frank Lloyd Wright and many others.³⁵ It is likely Kiesler provided lectures related to his developing book on show window design at the AUDAC, including his chapter on Modern Architecture. As the AUDAC was not a teaching institution, Kiesler's lecturing assignment was likely limited in scope.³⁶

Kiesler taught more extensively from 1929 to 1931 at the School of Contemporary Arts and Crafts in New York City.³⁷ The School of Contemporary Arts and Crafts existed in the Grand Central Palace at 480 Lexington Avenue and 46th Street. (CK) Faculty included Walter Biggs, B.D. Craig, A. Deerson, E. Diehl, B. Flack, A.L. Haynes, V. Harasty, and A. Jenkins among others. (CK) Kiesler taught two courses, one on Window and Store Design and another on Stage Design.³⁸ Kiesler's position was temporary, and although in May 1930, he was in contact with Columbia University and hoped to seal a contract to teach for the year of 1931, it was not until 1934 that Kiesler received his first permanent teaching assignment.³⁹ From 1934 to 1957, Kiesler

³⁴ Brochure, "American Union of Decorative Artists and Craftsman (AUDAC)," printed by L.F. White Co., n.p., n.d., Frederick Kiesler Papers, Box 4 of 7, Correspondence 1930-1932 Folder, Smithsonian American Archives of Art, Washington D.C.

³⁵ Ibid.

³⁶ See letter from George E. Tolman to Kiesler, June 2, 1930, Frederick Kiesler Papers, Box 4 of 7, Correspondence 1930-1932 Folder, Smithsonian American Archives of Art, Washington D.C..

³⁷ See letter from Beatrice Doane Craig to Kiesler, May 19, 1930, Frederick Kiesler Papers, Box 4 of 7, Correspondence 1930-1932 Folder, Smithsonian American Archives of Art, Washington D.C.; (hereafter cited in text as CK).

³⁸ (CK) Attorney for School Director Beatrice Doane Craig however, described the number of hours that Kiesler taught, or how much he was paid as potentially "embarrassing" to the school. Kiesler had lived in New York on a temporary visa since 1926, and had attempted to apply for a residency based on his consistent career as a professor. On recommendation from Kiesler's attorney George Tolman in 1930, Kiesler aimed to increase the number of hours and classes he taught at the School of Contemporary Arts and Crafts in order to stay in the country. Kiesler and his wife Steffie were to leave the country after 1927, but were able to stay based on his teaching, professional activities, his book, and at one time Kiesler received a doctor's note stating he had an ulcer and was too sick to leave the country. By 1932 however, Kiesler had arranged to stay in the United States for five consecutive years, the minimum time required to establish legal residency. See letters from Kiesler to George Tolman, May 27th 1930, and Tolman to Kiesler, June 2 1930, Frederick Kiesler Papers, Box 4 of 7, Correspondence 1930-1932 Folder, Smithsonian American Archives of Art, Washington D.C.

³⁹ See letter Frederick Kiesler to Mr. Mondell, New York, May 26, 1930, Frederick Kiesler Papers, Box 4 of 7, Correspondence 1930-1932 Folder, Smithsonian American Archives of Art, Washington D.C. While on a visit to Paris in 1930, Kiesler received a letter from architect Wallace K. Harrison notifying Kiesler that he had been appointed a junior university teacher at Columbia University School of Architecture. Kiesler returned to New York, but there is no known evidence to support that he actually received the position and taught at Columbia at this time. Harrison taught at Columbia, and the letter could have been used as professional justification for re-entry

accepted the position as manager and scenic director at Juilliard School of Music, where he received recognition for a number of successful operatic stage designs.

In 1934, Kiesler produced one of his most significant opera sets. Kiesler's costumes for *Helen Retires* by George Antheil and John Erskine were some of his most imaginative.⁴⁰ They resembled Schlemmer's fascination with modern costume design from the Bauhaus. Kiesler's designs consisted of a series of plywood shields in forms larger-than-life, shaped to the body movements of the actors playing the ghosts of dead war heroes. [Fig. 3.7] Helen moved about the heroes; she was dressed in all black with reflective lines and points on her arms, joints, and legs that appeared markedly similar to clothing techniques employed by Etienne Jules Marey for his chronophotography studies. [Fig. 3.8] Marey had elaborated Eadward Muybridge's method of using a black background behind the body and painting lines and points at distinct locations on figures, to graph the exact movements of the body in motion.⁴¹ [Fig. 3.9] Kiesler elaborated these temporal strategies to lend *biomorphic* character to his costume designs.

As Dieter Bogner of the Austrian Frederick and Lillian Kiesler Private Foundation has argued, Kiesler's costumes for *Helen Retires* were his first "biomorphic" design.⁴² The term "Biomorph" is a term coined by anthropologist Alfred Cort Haddon, in his 1895 book *Evolution in Art*.⁴³ For Haddon the biomorph is the representation of anything living.⁴⁴ According to Hadden, "the fact that there is life in the original of the biomorph appears in most cases to exert an

into the country. See also Harald Krejci, "Seat Furniture as Architecture," in *Friedrich Kiesler Designer: Seating furniture of the 30s and 40s*, ed. Austrian Frederick and Lillian Kiesler Private Foundation (Ostfildern-Ruit: Hatje Cantz Verlag, 2005) 33.

⁴⁰ As Kiesler had a long association with Antheil, he likely received the opportunity to teach at Juilliard through their relationship. See Held, 97 (see chap. 1, n. 5).

⁴¹ See Francois Dagognet, *Etienne-Jules Marey: La passion de la trace* (Paris : Hazan, 1987); English translation: *Etienne-Jules Marey: A Passion for the Trace* tr. Robert Galeta (New York: Zone, 1992). See also Anson Rabinbach, *The Human Motor: Energy Fatigue, and the Origins of Modernity* (Berkeley: University of California, 1992) 116-117.

⁴² Dieter Bogner made this observation in private conversation alongside Valentina Sonzogni at the Kiesler Archive in meetings we had in the archive June 2003.

⁴³ See Oliver Botar, *Prolegomena to the study of biomorphic modernism: biocentrism, László Moholy-Nagy's "new vision" and Ernó Kállai's Bioromantik*, PhD Thesis, University of Toronto, 1998. 54. As held in the Canadian Center for Architecture Research Library. I was introduced to this text through research and conversations held at the Canadian Center for Architecture with Phyllis Lambert as a Collections Research Grant Recipient in 2006. See also Alfred Cort Haddon, *Evolution in Art: As Illustrated by the Life-histories of Designs* (1895) (London: Walter Scott, 1902) 126-128.

⁴⁴ Botar, *Prolegomena to the study of biomorphic modernism*, 54.

influence on the biomorph itself, so that it comes to have what might almost be described as a borrowed vitality.”⁴⁵ Biomorphs represent biological forms alive in nature. They carry through perception of their inscription a sense of the vital quality of the original.⁴⁶ Whether through gesture, movement, rhythm or mere association, Kiesler’s costumes maintained biomorphic character from the shape of human actions on stage.

For Kiesler, correlating costumes and stage scenery to the rhythms of bodies-in-motion was relevant to the study of architecture. As Kiesler suggested in *Architectural Forum* several years later,

not only do architects make first-rate stage designs, but that stage design makes better architects [because]...in a few weeks the architect must meet and solve a myriad of problems involving both people and esthetic considerations. He must create a setting that permits every action of the singers to be properly carried out, take care of all mechanical requirements of lighting and stage-shifting, and produce a suitable atmosphere.⁴⁷

Stage design responded to parameters that shifted continuously to performative criteria that evolved throughout the drama of the play. Theater is not a static proposal, and theater architecture as Kiesler imagined did not aim to be permanent and fixed. For Kiesler, theater architecture should perform in response to actor and spectator’s rhythm and movements. In his 1935 design for *Pasha’s Garden* by John Seymour and Henry Tracy for example, he recreated a spiral platform similar to his 1924 Space Stage that stimulated performances of movement and rhythm. [Fig. 3.10] Kiesler’s translation of continuous stage action through the study of bodies-in-motion proved to inform his architectural interests.

⁴⁵ Ibid.

⁴⁶ Ibid. 55. The biomorphic was a discourse in the study of art by the 1930s. In his 1936 book *Cubism and Abstract Art*, MoMA director Alfred Barr defined the commonly accepted distinction between geometric and biomorphic art. Curvilinear, decorative, and emotional qualities associated with the Surrealists, Barr believed, were biomorphic in comparison to the rectilinear, structural, and intellectual categories of more geometric abstract art. Barr’s distinction does not account for microscopic geometric and fractal qualities of structures associated with organic life as studied by morphologist Ernst Haeckel for example; it is more a macroscopic assessment that biomorphic art appears to incorporate live movement and gesture in its visual form of association. See Alfred H. Barr Jr., *Cubism and Abstract Art* (New York: MoMA, 1936) 19.

⁴⁷ “American opera designs.” *Architectural Forum*, vol. 76, Jan., 1942, 16.

Kiesler's contribution to stage design was highly valued in architecture educational circles in New York at the time. In the fall of 1936 while teaching at Juilliard, Kiesler was invited by Dean Arnaud to collaborate on a new course in scenic design at Columbia University School of Architecture.⁴⁸ Kiesler directed architecture students to plan and construct sets and costumes used for three of the operatic performances presented at Juilliard that year. (CU 39) Kiesler's course was well received, and he continued to teach stage design at Columbia University, where he was invited to launch his new Laboratory of Design Correlation. (CU 39)

The Laboratory of Design Correlation

The Laboratory of Design Correlation was created for the systematic study of pure form and its application to architecture and industry. (CU 39) It was part of a larger programmatic experiment at Columbia initiated to investigate a scientific approach to architecture design and urban planning. (CU 38) The laboratory was devised to experiment in practical systems of construction technique as an alternative course of study to the core graduate architecture studio design curriculum—leading to a Master of Science in Architecture. (CU 39)

The course was multi-disciplinary in nature, and open to candidates throughout the University. (CU 39) In the first year of the laboratory, Kiesler selected one student from the School of Architecture, and enlisted three other students outside the department: one from industrial design, one from art, and one from sociology.⁴⁹ Kiesler divided the laboratory into five categories: theory lectures, research techniques, graphic presentation methods, model planning, and shop work. (1LR 3) He supplemented lectures with films from physics, anthropology and biology, which included: *The World of Paper*, *Constitutions & Transformations of the Elements*, *The Arrangement of Atoms & Molecules in Crystals*, *Oil Films on Water*, *Radioactive Rays*, *Beyond the Microscope*, *Molecular Theory of Matter*, *Electrons*, *The Frog*, *Tiny Water Animals*,

⁴⁸ See Theodore Rohdenburg, *A History of the School of Architecture: Columbia University* (New York: Columbia University Press, 1954) 39. As held in the University Archives and Columbian Library, Columbia University, New York; (hereafter cited in text as CU).

⁴⁹ Frederick Kiesler, "First Report on the Laboratory of Design Correlation," 1937, unpublished, 4, Laboratory for Design Correlation, REC 03 Box, Activities/Reports, Reports on the Laboratory for Design Correlation Folder, Kiesler Archives, Vienna; (hereafter cited in text as 1LR).

and *Butterflies (Mutation)*. (1LR 8) In addition, Kiesler taught a supplemental two hour per week graduate elective architecture seminar on the interrelationship of form, function, and structure as shown in nature and shelter construction—titled the “Morphology of Design”.⁵⁰ Studies presented on the evolution of form and function both in nature and technology were then structured around a practical laboratory experiment.

In his “First Report on the Laboratory of Design Correlation,” to Dean Arnaud, Kiesler explained that he introduced the practical problem of storing books in the home to the studio: “I chose...[this] theme because everyone is familiar with it, and by that have probably lost perspective of it. One of the chief aims of our Laboratory is to learn to see everyday happenings with a fresh keen eye and to develop by that a more and more critical sense for our environment.”⁵¹ Critical study of everyday life was important to Kiesler. As architecture engages our habits—our autonomic actions—it creates environments which affect everyday life. By challenging perceptions of daily habits, Kiesler hoped to gain new insights into designs for familiar habitual activities. He proposed to study the dialectical relationship between man and the environment, which he described as—“biotechnique”— the study of “the interrelation of a body to its environment: spiritual, physical, social [and] mechanical.”⁵²

⁵⁰ Students received lectures on the “General Principles of Morphology” and “Meaning of Function and Form” and included study of the structure of cells, molecules, atoms, and electrons from books by Rutherford, Dalton, and Metchnikoff. See (1LR 3). See also Letter from Kiesler to Dean Wells Bennett, University of Michigan, May 1, 1940, “The Laboratory in itself is divided into two groups of students: those who are newcomers and those who are continuing their research and construction work. A third group are the graduate students of the regular School of Architecture who take an elective course with me under the title of Morphology of Design,” Laboratory for Design Correlation, REC 10 Box, Third folder unmarked, Kiesler Archive Vienna. See also Frederick Kiesler, “Report on the Work of the Laboratory for Design Correlation,” Nov. 13, 1939, unpublished, 8, Laboratory for Design Correlation, REC 03 Box, Activities/Reports, Reports on the Laboratory for Design Correlation Folder, Kiesler Archives, Vienna.

⁵¹ (1LR 2). Kiesler’s first wife, Steffi Kiesler was employed as a foreign assistant at the New York Public Library since August 1927; her day to day experience likely inspired the subject of Kiesler’s architectural research project. For specifics on Steffi’s position, see letter from Esther Jolueston to Whom it may concern, April 28, 1930, Frederick Kiesler Papers, Box 4 of 7, Correspondence 1930-1932 Folder, Smithsonian American Archives of Art, Washington D.C.

⁵² Frederick J. Kiesler, “Notes on Architecture: The Space-House,” *Hound & Horn* (January: March 1934) 292. This is the first time Kiesler used the term “biotechnique” in his published writings.

Biotechnique—Biotechnic

Kiesler first defined his interest in “biotechnic” architecture in his proposal for “A Laboratory for Social Architecture” between 1933 and 1934.⁵³ Kiesler had lectured at the University of Chicago to the faculty of Social Science, and at the Industrial Design Conference in Chicago in 1933; he returned to Chicago to give two lectures in January 1934 on modern product design at “The difference between Good and Bad Modern Design” exhibition.⁵⁴ While in Chicago, Kiesler presented a three-page proposal likely to the director of the Art Institute in Chicago hoping to establish a research laboratory predicated on the study of contemporary industrial design, housing, and planning.⁵⁵ In his proposal, Kiesler elaborated urban design interests that he had already begun to form in his book on show window designs in 1930.

With avant-garde approach, Kiesler argued in his proposal against International Style modernism. Kiesler had come to believe the United States “lacked guiding authority” for its architecture, due to its “direct adaptation of foreign styles, past and present.”⁵⁶ European modern architecture was progressive he argued, but it is rooted in European tradition, and he proposed

⁵³ Kiesler refers to the Laboratory of Social Architecture in a letter written to Maxwell Levinson of *Shelter* magazine: “Dear Max: [...] My script on a Laboratory of Social Architecture is in Chicago and I am writing today to get it back. [...] I am enclosing two curriculum vitae which you may want.” See Letter from Maxwell Levinson to Frederick Kiesler, April 19, 1934, Maxwell Levinson Archive: vertical file, Frederick Kiesler Folder, the Canadian Center for Architecture Special Collections Archive, Montreal.

⁵⁴ Kiesler includes in a “vitae sent to Maxwell Levinson reference to these lectures in Chicago in 1933. See Curriculum Vitae, Frederick J. Kiesler Architect,” 1920 to 1933 with additional years 1934 to 1937 added to the text at a later date, 1-2, Maxwell Levinson Archive: vertical file, Frederick Kiesler Folder, the Canadian Center for Architecture Collections, Montreal. Kiesler also refers in a letter to Maxwell Levinson that he lectured in Chicago in 1934: “Dear Max: Just returned from Chicago where I delivered two lectures and worked quite hard at a factory. Are you not coming one of these days to New York? I would like to talk to you, and if you can come do let me know. Except for breakfast you can have every meal at our home, and I should be very happy to have you stay at a Nearby hotel at my expense. Best Greetings. Frederick J. Kiesler, Architect.” See letter from Frederick Kiesler to Maxwell Levinson, January 15, 1934, Maxwell Levinson Archive: vertical file, Frederick Kiesler Folder, the Canadian Center for Architecture Collections, Montreal. See also Harald Krejci, “Seat Furniture as Architecture,” 33.

⁵⁵ Kiesler met with the director of the Art Institute in Chicago for lunch January 11, 1933. It is unclear that they spoke specifically about Kiesler’s proposal, although it seems likely. See Harald Krejci, “Seat Furniture as Architecture,” 33.

⁵⁶ While “European results in this field are most progressive,” they “adhere to European tradition both from the standards of living and from the industrial point of view.” Frederick Kiesler, “A Laboratory for Social Architecture”, n.p., n.d., 1, Laboratory for Design Correlation, REC 03 Box, Activities/Reports, Reports on the Laboratory for Design Correlation Folder, Kiesler Archives, Vienna; (hereafter cited in text as SA).

instead to develop new architectural standards “from the needs and traditions of the United States.” (SA 1) Kiesler designed a Laboratory for Social Architecture to organize collaborative research similar to the Brooklyn Theater Institute that might support new modes of thinking. Kiesler proposed the Laboratory for Social Architecture consist of ten men—one leader, three assistants, and six designers and researchers. The three assistants would be from the fields of structural mathematics, air conditioning, and fuel engineering. The laboratory would work in coordination to testing agencies vital to the questions of housing, food, clothing, transportation, hygiene, etc. Included in the laboratory would be a housing library and file system for cataloging new materials. Publicity would be an important element after the first semester of study and would include “the promotion of an international and interracial pictorial language corps.” (SA 1) Kiesler proposed the Laboratory for Social Architecture would reach a wide and diverse audience. Its research would be primarily scientific in character and would concern “the whole shelter population for the United States.” (SA 1) Kiesler had hoped to invite lecturers in the fields of social and medical science, in addition to physics. And in order “to understand organic growth of architectural units on any scale,” the whole group would additionally take consultation courses in Biology. (SA 1)

Kiesler heavily invested the Laboratory for Social Architecture in the study of natural and social sciences with particular emphasis on the technical practices of mechanical engineering. The laboratory invested interest in mechanical and structural systems that surrounded innovations similar to the use of steel structure and air-conditioning by the Chicago School architects for example. Kiesler used the term “biotechnic” to describe the holistic methodological research application of natural, social, and mechanical sciences to organic building design. (SA 1) The “biotechnic” he argued “is the time-space environment corresponding to human growth. The relationship of the human to its surrounding, social, spiritual, physical, [and] mechanical.”⁵⁷

⁵⁷ (SA 1); Kiesler used slightly different terminology when defining “biotechnic” instead of “biotechnique”. “Biotechnique” emphasized the “interrelation of a body to its environment,” while the biotechnic was described as “a time-space environment corresponding to human growth. The relationship of the human to its surrounding.” The biotechnic references correspondence, human growth, and the surrounding environment, terms to be discussed used by Mumford and Geddes, while biotechnique is more precise, complete, and all inclusive.

Kiesler quickly switched his use of the term “biotechnic” to “biotechnique” in 1934, for reasons he later explained in his article on “Architecture as Biotechnique: On Correalism and Biotechnique: Definition and Test of a New Approach to Building Design,” in *Architecture Record*, 1939. “*Biotechnics*, a term which Sir Patric[k] Geddes ha[d]...employed,” Kiesler argued, “can be used only in speaking of *nature’s* method of building, not of *man’s*.”⁵⁸ Biotechnique “is *the special skill of man which he has developed to influence life in a desired direction*,” Kieser maintained. Kiesler argued he first coined the term biotechnique in his treaty on “Town Planning,” (his article on the City-in-Space) as “Vitalbau” in *De Stijl*, 1925.⁵⁹ Although, *Vitalbau* and *biotechnik* are not the same, Kiesler had hoped to assert his original interest in a “biotechnic” architecture—a study that he observed now appeared in the “writings of other authors” in the 1930s.⁶⁰

Architecture historian Lewis Mumford for example, had begun using the term “biotechnic” as published in *Technics and Civilization* in 1934.⁶¹ Mumford described the “biotechnic” specifically as a period of architecture where machines completely integrate with human needs and desires.⁶² For Mumford, the biotechnic specifically defined a future time when humanity merged completely with technology. As Mumford had observed, “our mechanical habits and our unconscious impulses have been tending steadily” in this direction for quite some time.⁶³ Mumford derived his interpretation of the biotechnic as the conflation between humanity and machines in part from Patrick Geddes’ studies on the “palaeotechnic” and “neotechnic” in *Cities in Evolution* published in 1915.⁶⁴

⁵⁸ Frederick Kiesler, “On Correalism and Biotechnique: a definition and the new approach to building design,” *Architectural Record*, v. 86 (September 1939) 67; emphasis in original; (hereafter cited in text as CB).

⁵⁹ (CB); emphasis in original. For *Vitalbau* see Frederick Kiesler, “*Ausstellungssystem Leger und Trager*,” *De Stijl* Serie XII nos. 10 & 11, 6 Jaar 1924-1925, 146. Translated by Frederick and Steffi Kiesler in varying versions from 1925-1930. As held in the Kiesler Archive, Vienna.

⁶⁰ *Ibid.*

⁶¹ Lewis Mumford, *Technics and Civilization* (New York: Harcourt, Brace and Company, 1934) 353.

⁶² *Ibid.*

⁶³ *Ibid.* 352.

⁶⁴ Patrick Geddes, *Cities in Evolution: An Introduction to the Town Planning Movement and to the Study of Civics* (New York: Williams and Norgate, 1915: rpt. New York: Oxford University Press, 1950) 32-46. See also Philip Steadman, *The Evolution of Designs: Biological analogy in architecture and the applied arts* (New York, Cambridge: Cambridge University Press, 1979) 167.

Geddes was a Professor of Botany and Sociology who wrote several books with Natural History Professor and former student Sir Arthur Thomson, including the 1911 publication *Evolution* which Kiesler held in his Library.⁶⁵ Geddes and Thomson were self-proclaimed Neo-vitalists who studied ecology, biology, physiology, and morphology.⁶⁶ Geddes applied their environmental research on the evolution of organic form to the study of cities, housing, and town planning.⁶⁷ Geddes and Thomson used the word “Biotechnics” in 1925 to define a new field of “Applied Biology” relevant to the study of industry, ethics, sociology, psychology, and politics.⁶⁸

Mumford had adapted Geddes’ theory of the Biotechnic to define a future period of unity between society, morality, and the machine. For Mumford, the biotechnic period ushered in complete assimilation of the body-machine complex as distinct from the neotechnic—a period where bodies and machines were still learning to coordinate to each other’s design. (B 355) During the biotechnic period, an effort “to widen the province of order and control and provision,” Mumford believed would shape “a new conception of the organic” as an economic “collective.” (B 356, 354) Through close observation, analysis and abstraction of nature, the biotechnic period would study the environment to assimilate according to Mumford “the machine not merely as an instrument of practical action but as a valuable mode of life.” (B 356) “The machine is a communist,” he argued; “it is a collaboration of innumerable workers” that aimed to achieve “effective work” and “standardization”. (B 354) The machine ideally would prove a prosthesis derived from nature that served according to Mumford to “eliminate social distinctions” and provide more “leisure” time for the “release of other organic capacities”. (B 356) The biotechnic period according to Mumford alluded to a complex state of automatism where bodies and machines maintained “composure and equilibrium”—between “inner impulse” and “outer environment”—as “a [total] work of art.” (B 356) In his 1937 article “Death of the Monument” printed in *Circle* magazine alongside Karl Honzik’s “Note on Biotechnics,” Mumford and Honzik

⁶⁵ Patrick Geddes, *Evolution* (New York: Henry Holt, 1911); see Lillian Kiesler, “Personal Library of Frederick Kiesler,” 123.

⁶⁶ Patrick Geddes and Arthur Thomson, *Life: Outlines of General Biology* (New York: Harper & Brothers Publishers, 1931) Preface.

⁶⁷ Geddes and Thomson, “Organic Form and Architecture,” in *Life*, 667-714. See also Geddes, *Cities in Evolution*.

⁶⁸ Geddes and Thomson, *Biology* (London: Henry Holt and Co., 1925) 245-246; (hereafter cited in text B).

both agreed the biotechnic characterized human structures derived from nature that would evolve to provide opportunities for future societal growth.⁶⁹ Despite the supposed difference in terminology between Kiesler, Mumford, and Honzík, their overall strategy to form an environmentally informed architecture of organic structures that evolved in response to human growth were extremely similar.

Geddes' use of the term biotechnic that had informed both Kiesler and Mumford, resonated with Hungarian plant biologist R.H. Francé similar use of the term. Francé's 1923 proposal for biotechnic design described in *Die Pflanze als Erfinder*, supported innovation through direct observation of cellular systems and plants.⁷⁰ [Fig. 3.11] By examining the technical arrangements of unicellular organisms and other artistic forms in nature, Francé suggested designers could manufacture economic constructions for corresponding human environments and situations. As Francé best explained, close examination of organic articulation alongside careful analysis of function and environmental factors can characterize and inspire innovative industrial form, growth, and distribution. Environmental study can be employed to generate complex forms and universal systems of organic design.

As interpreted by Raoul Hausmann in his 1924 article "Ausblick," published in 3G as edited by Richter, Mies, Graeff and Kiesler, Francé's biotechnic approach to growth and structure in plants (*biotechnischen*) provided members of G a model for understanding industrial design as a synthetic composition and design process.⁷¹ Francé's writings were enormously important to the members of G especially Moholy-Nagy, Mies, and at least indirectly Kiesler.⁷² As examined by Philip Steadman in *The Evolution of Design: Biological Analogy in Architecture and the Applied*

⁶⁹ Louis Mumford, "The Death of the Monument," *Circle: International Survey of Constructive Art*, 263-270. See also Karl Honzík, "A Note on biotechnics," *Circle: International Survey of Constructive Art*, 256-262. See also Steadman, *The Evolution of Designs*, 165-166.

⁷⁰ To design a new medicinal shaker, for example Francé studied the poppy plant. He observed that the presence of humidity expanded the skin, which covered holes protected under the spore capsule. When the air was dry the skin would stretch forward to lift the capsule lid and release spores. The environmentally sensitive elastic material element of the capsule inspired Francé to create a similar form of saltshaker. See R.H. Francé, *Die Pflanze als Erfinder* (Stuttgart, 1920); English translation: *Plants as Inventors* (New York: Albert and Charles Boni, 1923) 6-8.

⁷¹ Raoul Hausmann, "Ausblick," *G: Zeitschrift für elementare Gestaltung*, ed. Graff, Kiesler, Mies v.d. Rohe, Richter, Nr. 3, June 1924. 5. As held in the Canadian Center for Architecture (CCA).

⁷² Despite likely reading Hausmann's article, there is no known evidence, nor did Kiesler admit, that he read Francé.

Arts—and more recently by Oliver Botar and Detlef Mertins—Moholy-Nagy credited Francé for inspiring his interest in the intensive analogous study of biology and technology in the 1920s and 1930s.⁷³

Moholy-Nagy adapted Francés biotechnic theory to the study of architectural design, and coined the term “biotechnique” at the Bauhaus.⁷⁴ Moholy-Nagy’s application of biotechnique was very different from Kiesler’s biotechnical theories, however. Most relevant to Moholy-Nagy, Francé had argued there were seven underlying universal forms that comprised all animate structures. [Fig. 3.12] For Moholy-Nagy, “biotechnique” was a formal methodology that specifically applied seven basic elements: the crystal, sphere, cone, plate, strip, rod, and spiral to all forms of industrial and building design.⁷⁵ [Fig. 3.13] Kiesler instead studied biotechnique as a methodology more similarly to Geddes, Mumford, and Honzík. Kiesler more likely encountered the term biotechnique from Moholy-Nagy as published in *The New Vision* in 1928. Although unlike Moholy-Nagy, Kiesler elaborated a biotechnological design methodology to derive formal and organizational strategies to achieve *correlation* between architecture, bodies, and the environment.

Correlation—Correalism

Kiesler derived his use of the term correlation most likely in part from Geddes’ morphological studies of *Evolution*.⁷⁶ In his book, Geddes explored a wide-range of influential

⁷³ Francé had enormous impact on Mies and Moholy-Nagy as analyzed by Detlef Mertins and Oliver Botar. As studied by Detlef Mertins, “Living in a Jungle: Mies, Organic Architecture and the Art of City Building,” *Mies in America*, ed. Phyllis Lambert (Montreal: Harry Abrams, 2001) 590-642. See also Botar, *Prolegomena to the study of biomorphic modernism*. 238. See also Philip Steadman, *The Evolution of Designs: Biological analogy in architecture and the applied arts* (Cambridge: Cambridge University Press, 1979) 163. See also Francé, *Plants as Inventors*.

⁷⁴ Laszlo Moholy-Nagy, *Von Material zu Architektur* (Munich: Langen, 1929); English translation: *The New Vision: Fundamentals of Design, Painting, and Sculpture*, tr. D. M. Hoffmann (New York: Brewer, Warren & Putnam, Inc., 1930) 53, 120.

⁷⁵ Moholy-Nagy, *The New Vision*, 122-125. The spiral he argued for example constructed “aesthetic principles” through formal application of the screw shape.

⁷⁶ Morphology is the study of form. German physiologist Karl Friedrich Burdach introduced the term in 1800. Burdach intended Morphology to be a principle division in a larger systematic study of life he introduced as Biology. Morphologists study form and function in an attempt to determine the generative relationships and systems delimiting bodies of organic life. Aristotle is perhaps the first morphologist in his effort to classify animal and plant life. Goethe, Cuvier, Haeckel, and Darwin, to name only a few were significant morphologists in the 19th century. Morphology

texts by Darwin, Bergson, James, Hans Driesch, Huxley, Lamarck, Ernst Haeckel, and E.S. Russell. Geddes' chapter on "Variation and Hereditary" examined the history and theory of correlation, as originally studied by E.S. Russell in his formative 1916 work *Form and Function*.⁷⁷ Kiesler transcribed *Form and Function* in his research laboratory and similar to E.S. Russell understood that correlation in relation to animal morphology can be described as the practical application of structure to function where the whole can be constructed in relation the parts.⁷⁸ For early morphologists from Aristotle to Baron George Cuvier and Goethe, all organs of an animal arguably form a single system, where the parts hang together, and act and re-act upon one another.⁷⁹ Modification to one part of the body affects the rest, and early morphologists believed a *unity of plan* existed in vital correlation that was not subject to mere mathematical analysis.⁸⁰

benefited from advances made in the microscopy. It became an obsolete science however, due to the limitations of studying, depicting, and analyzing organic form until D'Arcy Thompson's 1942 study of *On Growth and Form*. For a good study on the history of morphology see Lynn K. Nyhart, *Biology Takes Form: Animal Morphology and the German Universities, 1800-1900* (Chicago: University of Chicago Press, 1995). See also R.S. Russell, *Form and Function: A Contribution to the History of Animal Morphology* (Chicago: John Murray Publishers, Ltd., 1916: rpt. Chicago: University of Chicago Press, Ltd., 1982).

⁷⁷ I was introduced to Russell's *Form and Function* through transcriptions made in research notes held in Kiesler's laboratory archives in Vienna. Excerpts of Russell's book were transcribed from the preface, pages 68, 78, and 248-249, and included study of Aristotle, Cuvier, Etienne Geoffroy St. Hilaire, Haeckel, and Darwin. "Form and Function by R.S. Russell, D5914R912," TXT 02 Box, Man/Typ various e-f-g, Kiesler Archive, Vienna.

⁷⁸ See Russell, *Form and Function*, 34, 35. Correlation commonly rooted in the study of animal morphology traces to Aristotle's early studies of animal and plant classification systems. Aristotle understood correlation as "the interdependence of two organs which are not apparently in functional dependence on one another." Multiple stomachs in an animal for example correlate to a deficiency found in the teeth. The relationship is not specifically causal, but the anatomical parts do nevertheless relate. See Russell, *Form and Function*, 10, 11. A similar idea of the correlation between parts became the principle study of Cuvier's theories on animal classification in 1789. See Russell, *Form and Function*, 11, 35. Russell summarized Cuvier's principal of correlation in 1916. Geddes later described the same principal in his book with Thomson, *Life Outlines of General Biology* in 1931. Goethe similarly agreed with Cuvier that a general scheme existed in accordance with the "vital principals" that govern all forms. *Ibid.* 49-50. See also Johann Wolfgang von Goethe, "The Metamorphosis of Plants," in *Goethe's botany; the Metamorphosis of Plants (1790) and Tabler's Ode to Nature (1782)*, tr. Agnes Arber, *Chronica Botanica*, v. 10, no. 2 (Waltham, Mass, 1946) 103.

⁷⁹ Russell, *Form and Function*, 35. From the shape of one organ morphologists believed, they could infer the shape of other organs if they had sufficient empirical knowledge of functions, and the relation of structure in each kind of organ.

⁸⁰ *Ibid.* 38. Correlation also became a study of statistical analysis for the study of biometrics. Francis Galton, a cousin of Charles Darwin founded the Biometric approach to study heredity. Distinguished by its use of statistical techniques to study continuous traits and population-scale aspects of heredity, this approach was employed by Karl Pearson who founded the journal *Biometrika* in 1901. *Biometrika* was established in 1901 to promote the study of biometrics, the statistical analysis of hereditary phenomena. In 1930, *Biometrika* became a journal for statistical

Darwin, did not accept a teleological explanation for the principles of correlation, and instead proposed evolution through natural selection as a substitution for the guiding principles of Vitalist philosophy. For Darwin and his followers, parts of forms correlate in accord with functions evolving in response to changing environmental factors in time.⁸¹ Kiesler hovered between Vitalist and Natural Selectionist views throughout his architectural writings. He believed both in the guiding principles of life forces, while at the same time elaborated evolutionary practices from the natural sciences in his work. Kiesler accepted the concept of survival of the fittest, but aimed to design forms that might function to ameliorate natural and social evolutionary processes.

Although the principles of “form follows function” that derived in response to studies of *Form and Function* as attributed to Louis Sullivan were highly influential in architecture beginning in the late 19th century, correlation as a study in architecture did not become significant until after Fuller titled his introduction to *Shelter* magazine “Correlation” in 1932.⁸² Correlation was a discourse of interconnection, continuity, and interrelationship derived from evolutionary ideas about tools and society advanced by the Structural Studies Associates (the SSA).⁸³ The SSA organized under Fuller, and included Kiesler as a member in their group.

Kiesler formed strong associations with the SSA likely upon the success of his lectures on Modern Architecture from his show window book given at the AUDAC. Fuller had admired Kiesler’s “excellent book” and included an article on Kiesler’s theater architecture in the May 1932 volume of *Shelter magazine* (formally titled *T Square Club Journal*).⁸⁴ The SSA was an informal

theory and methodology. In probability theory and statistics, correlation, (often measured as a correlation coefficient), indicates the strength and direction of a linear relationship between two random variables. In general statistical usage, *correlation* or co-relation refers to the departure of two variables from independence.

⁸¹ Ibid. 238-239.

⁸² Buckminster Fuller, “Correlation,” *Shelter* (Vol. 2, No. 4: May 1932) 3.

⁸³ See William W. Braham, “Correalism and Equipoise: observations on the sustainable,” *Arq* (vol. 3, no.1: 1999) 58.

⁸⁴ Buckminster Fuller, Introduction to Frederick Kiesler, “A Festival Shelter: The Space Theater for Woodstock, N.Y.,” *Shelter* (Vol. 2, No. 4: May 1932) 44. As held in the Canadian Center for Architecture Collections, Montreal. Included in the formative edition of *Shelter* magazine was Eugene Schoen, a founder of the AUDAC; Douglas Haskell also of the AUDAC; Henry Churchill, AIA of Thompson & Churchill in New York; Knud Holm who wrote for *Architectural Record*; Henry Wright, a community planner for the City Housing Corporation; Theodore Lursen of Harvard University, Simon Breines, a New York architect; Roger Sherman, an editor of *Architectural Forum*; Peter Stone, a former editor of *General Building contractor*; Howard Robertson, Director

association for those interested in shelter as an industrial, social, economic and philosophic manifest.⁸⁵ It included Douglas Haskell and Eugene Schoen of the AUDAC, in addition to Henry Wright of the New York City Housing Corporation, and several editors and writers for *Architectural Record* and *Architectural Forum*. Max Levinson and George Howe were the editors of *Shelter* and both developed strong personal ties with Kiesler over the years.

Fuller's use of the term correlation in his introduction had complex meaning, and as he said described most specifically the text itself and the network structure of *Shelter* magazine—its “contributions, and reasons for their selection and arrangement.”⁸⁶ Fuller emphasized the correlation between the carefully selected essays and the negotiations made between the texts. He placed articles in a specific order that included repetition for sake of continuity. Readers could only understand the unity of the overall text and its correspondence to a scientific rationalization of shelter through the composite *criticism* the magazine engaged.⁸⁷ Fuller elaborated in length on the list of authors and their appropriate part in the overall structure of *Shelter* in his introduction. Each author performed as an anatomical part in the overall text. As an analogy to building design and urban practice, Fuller professed how each part *correlated* within their context in continuity as an organic whole—a complete work of art.

In 1934, Kiesler described how he collaborated with *Shelter*, “correlating medium for the forces of architecture,” as he began using the word correlation in his writing around the same time.⁸⁸ Kiesler employed the term in his proposal for his Laboratory for Social Architecture in a brief outline of study that would include the “correlation of painting, sculpture, and structure,” and the “correlation of working, living, and leisure.” (SA 3) Kiesler however did not significantly refer to correlation in his work until he began his Design-Correlation Laboratory in 1937, and subsequently defined his doctrine of “Correalism” by 1939.

of the Architectural Association in London; A. Lawrence Kucher, Director of Architectural Record's editorial policy; Albert Fey formally of the Bauhaus; and Max Levinson the editor, of *T Square Club Journal* which had been renamed *Shelter* magazine in 1932. See Fuller, “Correlation,” 3.

⁸⁵ See Henry Churchill, “Structural Study Associates,” *Shelter* (Vol. 2, No. 4: May 1932) 5. As held in the Canadian Center for Architecture Collections, Montreal.

⁸⁶ See Fuller, “Correlation,” 3.

⁸⁷ *Ibid.*

⁸⁸ Kiesler, Curriculum Vitae, “Frederick J. Kiesler Architect,” 2.

Kiesler used both terms correlation and correalism interchangeably to describe his research practice. Correalism was a neologism Kiesler created for the term correlation.⁸⁹ Kiesler elaborated upon Geddes' and Fuller's use of the term with more pseudo-scientific ideas similar to Kiesler's reading of Walter Russell's studies on electro-magnetism and universal forces of degeneration and regeneration. In addition, Kiesler held several books on molecular biology and physics in his library that likely informed his elaborative theory including: *The Earth of Ours* by Jean-Henri Fabre, *Elementary Practice Physics* by Newton Henry Black, *Foundations of Biology* by L.L. Woodruff, *The Scientific Outlook* by Bertrand Russell, and *Sparks from the Electrode* by C.L. Mantell.⁹⁰

Correalism, according to Kiesler, provided a scientific basis for architects to create viable technological environments. It covered the range of design production from “shirts to shelter”—that become the “constituent parts of...[our] total environment.”⁹¹ Kiesler modeled the correlation of nature, bodies, and the built environment on laws of molecular inter-relationships that interacted between natural and man-made organisms. [Fig. 3.14, Fig. 3.15] As Kiesler contended, reality and forms were merely “visible trading posts” of continuously mutating “anabolic and catabolic... nuclear-multiple-forces” —“integrating and disintegrating at low rates of speed”. (CB 69, 61) Any distinctions between subjects and objects effectively diffused together through constant exchange of molecular forces acting in time. Thereby time became essential to Correalist practice, as “time” Kiesler declared is “the only resistance to continuity...that keeps

⁸⁹ Braham, “Correalism and Equipose: observations on the sustainable,” 58.

⁹⁰ Walter Russell, *The Russell Genero-Radiative concept or the Cyclic theory of Continuous Motion*; Jean-Henri Fabre, *The Earth of Ours* (New York: Jean-Henri Fabre, 1931); Newton Henry Black, *Elementary Practice Physics* (New York: The MacMillan Company, 1939); L.L. Woodruff, *Foundations of Biology* (New York: The MacMillan Company, 1936); Bertrand Russell, *The Scientific Outlook* (New York: W.W. Norton and Company, 1931); C.L. Mantell, *Sparks from the Electrode* (Baltimore: C.L. Mantell, The Williams and Wilken Company, 1933); See Lillian Kiesler, “Personal Library of Frederick Kiesler,” 123-126.

⁹¹ (CB 61) See also Frederick J. Kiesler, “Architecture as Biotechnology,” (New York: Planners Institute, 1940) 61: the reprint of original from the *Architectural Record*, September, 1939, with errata corrected, Index of Terms, Introductory Note and cover illustration all added. The Planners Institute, Inc. was run by Frederick and Steffie Kiesler since 1934 and was funded by Kiesler's teaching and other miscellaneous financial activities. See Letter from Federation Bank and Trust Co. To Whom it May Concern, April 22, 1938, Frederick Kiesler Papers, Box 4 of 7, Correspondence 1938 Folder, Smithsonian American Archives of Art, Washington D.C.

matter (the world) together.”⁹² Movement in time resists static form; it creates continuous dynamic relationships between man and the environment. In time, Kiesler believed everything essentially became networked, relational, and continuous. Correalism the science, and biotechnique the method were basis to achieve a total environment—a *Gesamtkunstwerk* of effects; they provided a “unified architectural principle” for design that Kiesler declared achieved “Time-Space Continuity.”⁹³

Believing his theory innovative, Kiesler trademarked the word “Correalism” while completing his unpublished book “On Correalism and Biotechnique” in 1939.⁹⁴ Originally commissioned to publish his book “From Architecture to Life” in 1931 for Brewer, Warren & Putnam, Kiesler wrote several incomplete drafts which he later renamed “On Correalism and Biotechnique”.⁹⁵ The book comprised ten chapters that outlined his overall theory of design practice, and although incomplete, appeared cohesive in its overall strategy to define the morphology of contemporary building practice.⁹⁶ An edited version of the most complete Ninety-Five page book was published in *Architecture Record*, September 1939, alongside montage images by Ezra Stoller of Kiesler’s Mobile Home Library built during the second year of Kiesler’s Design-Correlation laboratory. (CB 61-75)

⁹² Frederick Kiesler, “From Functional Design to Service Design,” 1936, n.n., n.p., Design Correlation Drawing Folder, the Kiesler Archive, Vienna; emphasis in original. Please note: when the archive relocated to their present location on Mariahilferstrasse in 2004, they began the process of labeling boxes with numbers and codes. Harald Krejci, Valentina Sonzogni and I are the few people who have reviewed almost all the material in the archive. The archive separates drawings, correspondence, and manuscripts in different sets of boxes and folders. No one has gone through the Design Correlation Laboratory material in its entirety except me. The archive has not marked all the material in the boxes. In addition, letters about the Home Library for example will be among drawing folders on the Vision Machine. Much of this material has never been seen and never been published.

⁹³ Frederick J. Kiesler, “Notes on Architecture,” 293.

⁹⁴ Kiesler applied for his trademark and registered with his lawyer in December 1938; see letter from Frederick Kiesler to Otto Nordon, December 17, 1938, Frederick Kiesler Papers, Box 4 of 7, Correspondence 1938 Folder, Smithsonian American Archives of Art, Washington D.C. See also Frederick Kiesler, “On Correalism and Biotechnique,” 1938, most complete unpublished manuscript, 1-95, Design Correlation Manuscript Box, the Kiesler Archive, Vienna; (hereafter cited in text as CBM) Please note there are several manuscript boxes in the archive that hold various versions and copies of “On Correalism and Biotechnique.”

⁹⁵ (CBM 3); See also Curriculum Vitae, Frederick J. Kiesler Architect, 1920 to 1933, 2, Maxwell Levinson Archive.

⁹⁶ See Appendix 1 for title chapters, pages, and brief description of “On Correalism and Biotechnique.”

Laboratory Research

The first year of Kiesler's laboratory was predominantly spent introducing Correalism and Biotechnique to the students. (1LR 1-14) Kiesler had hoped "to work quietly and with sufficient time and research-material" to develop his curriculum independently without being asked to produce. (1LR 1) Although he did make a small presentation of work at the yearly Alumni Day event, Kiesler intended to provide predominantly lectures (supplemented by films) alongside general research during the first year. (1LR 1) Kiesler's lecturers focused the study of variation and heredity in biology. In addition he organized Dr. Alexander Lesser, Dr. Gene Weltfish and Dr. Robert S. Lynd of Columbia University to speak on Anthropology and Sociology to his students.⁹⁷ With additional funding he had also hoped to invite: Waldemar Kaempffert on Invention and Society, G.H. McGregor on Zoology, L.C. Dunn on Genetics, R. W. Robey on Physics, Robert McIver on socio-Economy, W. D. Strong on Archeology, A. Montague on Morphology, and Selig Hecht on Bio-Physics. (1LR 7) In an effort to teach students to think for themselves, Kiesler hoped to challenge their interests in architecture with broad intellectual influences that surrounded research on evolutionary design. Their research originated through intellectual exploration, and as the course developed, by the second year Kiesler structured study on relevant design problems.

Kiesler initiated several research investigations with his students surrounding the problem of book storage in the home that produced practical results. Kiesler's student David Tukey investigated detail work on book storing by charting and sketching new ideas for—space economy, materials, light conditioning, and dust protection.⁹⁸ He also consulted catalogues on stack manufacturing from Snead & Company, Shaw-Walker, and G.F. metal office equipment.⁹⁹

⁹⁷ (1LR 5, 8) Lesser was a Boasian anthropologist lecturing at Columbia on race variation in the 1930s; he had a strong education in the teachings of John Dewey. Weltfish was also a Boasian anthropologist known for her studies of Pawnee Indian culture, art theory, and race and prejudice. Lynd was a sociologist who wrote a chapter in the 1930s "The People as Consumers," in *Social Trends*.

⁹⁸ Frederick Kiesler, "Second Report of the School Year, 1937 -38 of the Laboratory for Design Correlation," 1937-1938, unpublished, 1, Laboratory for Design Correlation, REC 03 Box, Activities/Reports, Reports on the Laboratory for Design Correlation Folder, Kiesler Archives, Vienna; (hereafter cited in text as 2LR).

⁹⁹ See "Shaw-Walker Catalogue, 1937," "G.F. Metal Catalogue 36C," "G.F. Adjustable Steel Shelving," "G. F. Metal Catalogue 36C," "Periodical Case, Hartford Medical Society from Library

[Fig. 3.16, Fig. 3.17] Kiesler had David Tukey, Alden Thompson, and Ronald Kaufmann complete a survey of problems for storing books in the home. (2LR 2) Students discussed several apartment and home planning arrangements of “elastic” spatial configurations with continuous built-in furnishings—by Neutra and others.¹⁰⁰ [Fig. 3.18, Fig. 3.19, Fig. 3.20, Fig. 3.21, Fig. 3.22] Kiesler then asked his students to make a report on St. Jerome’s library studied in J.W. Clark’s *The Care of Books* in order to examine as Kiesler described the “psycho-physiological succession” from “optical tactilism to manual tactilism” necessary in order to establish contact with a book.¹⁰¹ [Fig. 3.23, Fig. 3.24] This included studies of St. Jerome’s revolving book storage devices and the progression from vision to touch realized in the process of securing a book—from eye, to grasping, to movement of the foot, and so forth.¹⁰²

Kiesler’s assignments analyzed historical, technical, and manufacturer research relevant to their topic, and began to elaborate contemporary scientific studies to explore bodies and their relationships to the natural and built environment. To study the spatial effects of apperception on the visual and tactile habits of the user, Kiesler initiated a series of experiments he described as “contact-cycle studies”. Students imagined and recorded the experience of seeing and obtaining a book from St. Jerome’s library. They envisioned moving about the room in various scenarios as

Planning BK Stacks & Shelving,” “Litchfields P208, Sister’s Cylinder Bookcase, Sheraton 1802,” “Snead & Co, 1937, Stacks Buyer’s Guide,” Laboratory of Design Correlation, REC 07 Box, Student work/Plates, Box Folder #7, Kiesler Archives, Vienna. In REC 07 there are 7 box folders in addition to some loose plates of research studies made by Kiesler and his students for their files. These materials have been assembled from various magazines, books and photographs and many have been mounted on boards; some plates have been numbered.

¹⁰⁰ Frederick Kiesler, “Compact efficient planning, a certain elasticity of space usage by Hays & Simpson, General Electric Grand Prize, *Architectural Forum*, 1935, 284,” “One and two room apartments in Stockholm by Sven Markelius, static plan in upper, elastic plan in lower,” *Architectural Forum*, 1937, “Elastic use of space, Chicago Apartment House, 3 or 4 room duplex, 2 room and studio,” *Architectural Forum*, May 1937, “Continuous character of built-in furniture, Five room flat by Richard Neutra, *Architectural Forum*, May 1937, 400,” Laboratory of Design Correlation, REC 07 Box, Student work/Plates, Box Folder #6, Kiesler Archives, Vienna.

¹⁰¹ “Multiple Unification, a Study by: Ideographic Disintegration,” Student Report, unnamed, undated, unpublished, 2, Design Correlation Laboratory Files, Box 8, Series 11, Kiesler Archives, Vienna. See also “St. Jerome’s Library, Contact Cycle Studies: ‘Chance Description for Graphic Mutation of T.J. Clarks’ The Care of Books page 300 from a painting by Vittore Carpaccio,” Student Report, unnamed, undated, unpublished, 1, Design Correlation Laboratory Files, Box 8, Series 11, Kiesler Archives, Vienna. Thompson most likely contributed significantly to these studies, which began in the first year of the Laboratory.

¹⁰² Students drew a scroll approximately 4” wide and several feet long of their studies of St. Jerome’s Library. It is presently misfiled alongside “Notebook by Benjamin B. DuPont September 30 1952 Architecture 21 Mr. Kiesler,” Laboratory of Design Correlation, REC 10 Box, Kiesler Archives, Vienna.

they invented time-motion diagrams and charts of the virtual and habitual experiences of occupying space.¹⁰³ [Fig. 3.25] Similar to diagrams originally generated by Christine Frederick in her studies of time management for the home in 1912, Kiesler's students created temporal charts that recorded human actions.¹⁰⁴ His investigations prescribed positivist agendas to examine the body and its relationships of habit. Students observed, dissected, codified, and recorded scientifically the body-in-motion to imagine the limits of spatial design and its organization.¹⁰⁵

¹⁰³ See "St. Jerome's Library, Contact Cycle Studies", 2-3. "Commencing with: Chance Description, and (Contact Cycle) Pictorial Deduction. Our study has lead to: Graphic Mutation, Analysis of Fatigue and Regeneration, Design Appraisal Ideographic Disintegration, Physio-progression, Spherism of Activity-Interest Resulting in: Study Revision, with a view to approximating refinement of physio-environmental status within technological possibilities of the Renaissance, as it effected fatigue and regeneration. Re-Appraisal of same. Proposed presentation of study by embodiment in a continuous visio-graphic means. Chance Description for Graphic Mutation: Contact Cycle [Grade A-] [...] 1. Door opens from his study left open. Turntable visible; 2. St. Jerome steps down from his study into this library room; 3. Commences to search for the book with particular reference to his writing; 4. Pauses; 5. Moves to overhead shelf; 6. Looks up; 7. Raises his hand; 8. Standing, he reaches and grasps the book, lifts it down; 9. Examines it; 10. Temporarily places it on the floor while examining a second and third one; 11. Bends over to pick up first book; 12. Walks over to reading stand; 13. Places book on reading stand; 14. Steps upon platform; 15. Kneels; 16. Opens the book; 17. Prays; 18. Closes the book; 19. Stands, Crosses himself; 20. Steps back; 21. Sits down; 22. Meditates; 23. After sometime—stands, picks up book; 24. Steps down from elevation and walks to shelf; 25. Standing before shelf, he reaches ups and replaces book on shelf, perhaps in original position; 26. Turning he leaves the two books on the floor for later reference; 27. Walks toward study; 28. Steps into study."

¹⁰⁴ In 1912 Christine Frederick questioned the validity of comfortable, labor-less, time-efficient promises made by the electrical industry for their home products. She began to apply time-motion studies based upon the principles of Taylorism to housework as published in her book, *Scientific Management of the Home* in the U.S. in 1919 and U.K. in 1920. These time-motion studies tracked efficient use of the body in space in the act of cooking and cleaning. She also studied the use of appliances, particularly the vacuum cleaner versus the broom to quantify the savings of reduced physical labor. Frederick used graphic standards applied to plans and elevations to describe motion. See Christine Frederick, *Scientific Management in the Home: Household Engineering* (London: Routledge, 1920; Chicago: American School of Home Economics, 1919).

¹⁰⁵ See "St. Jerome's Library, Contact Cycle Studies, 2-3. Associated with text are charts and diagrams: see Chart III page 2: Shows "how the compartments of the mind tend to isolate each interest" and "activity": "The tendency toward isolations of interests and activities is an effort by the mind to order life processes and affairs, to concentrate on these, to secure these, to stabilize these. By so doing the mind simplifies these interests these activities thus reducing fatigue and providing for regeneration. [...] The mind is able to direct and to link these interests and activities through the very fact that they are isolate. Some of this is so habitual as to be spoken of as automatic (psycho-physio-reflexive). In each compartmental instance, matters not (Chart III page 3) immediately bearing upon the task or pursuit at hand are eliminated by the mind from awareness: in effect such matters cease to have existence; as soon, however, as their need arises, they are summoned automatically into being; into re-existence;" emphasis in original. See also hand drawn charts held in Laboratory for Design Correlation, REC 07 Box, Box Folder #5, Kiesler Archives, Vienna.

Adding to these contact-cycle studies, Alden Thompson began a series of scientific explorations into the “present day method of measuring fatigue,” where he charted bioelectric systems of observing sensory, central, and motor nerve impulses.¹⁰⁶ The intentions of these biotechnical studies as noted by Kiesler were to disclose tenseness in the muscles between “contracting and relaxing phases.”¹⁰⁷ [Fig. 3.26, Fig. 3.27] Using delicate electrical instruments recently developed by the University of Chicago for example, Kiesler hoped to measure muscle tension.¹⁰⁸ Fine wires leading directly from the patient’s muscle to an instrument could be used to record intensity of muscular movement. Through this research, Kiesler endeavored to determine how the body coordinated, moved, and fatigued in relation to obtaining a book from a shelf. He then coupled these investigations of fatigue measurement with studies of Benedict’s 1905 Respiration Calorimeter in an attempt to quantify the molecular processes involved in energy balance, expenditure, and heat transfer.¹⁰⁹ [Fig. 3.28, Fig. 3.29] Students hoped to measure fatigue and the regeneration of bodies from their contact cycle studies of the Library of St. Jerome. They produce measured calculations of labor performance in foot/pounds. From these research investigations, Kiesler hoped to derive a home library prototype of “energy and time-saving” efficiency.¹¹⁰ [Fig. 3.30, Fig. 3.31] To ensure this result, students examined successful

¹⁰⁶(2LR 2). These investigations included studies of Galvani’s 1794 electrical contractility studies in nerves; Hermann von Helmholtz 1879 Depolarization theory; Ostwald’s 1890 membrane potential theory; Einthoven’s 1901 string galvanometer used for deriving electrocardiograms; J.Y. Bogue’s 1928 use of the cathode ray to record electrical nerve impulses; and 1938 development of the polyelectrophysiograph. See Box Folder 2, Fatigue Measurement, Student Work/Plates listed in Appendix 2: Photostat 2- 10, 12, 13.

¹⁰⁷ See Box Folder 2, Fatigue Measurement, Student Work/Plates listed in Appendix 2: Photostat 11.

¹⁰⁸ Ibid. “Muscular contraction and relaxation can now be measured with an electrical instrument of precision developed at the University of Chicago with the generous aid of the Bell Telephone Laboratories. Fine wires lead directly from the patient’s muscle to the instrument. If the muscle is completely relaxed, the shadow of a very fine recording wire (see arrow) remains quiet, and a moving picture taken of this shadow shows practically a straight line. But if the muscle is tense, however slightly, the shadow of the recoding wire will vibrate...” From description typed on back of photograph.

¹⁰⁹ See Box Folder 4, Exchange of Matter by Respiratory Methods, Student Work/Plates listed in Appendix 2: Photostat 1, 3, 4. See also Box Folder 3, Energy Balance Methods, Student Work/Plates listed in Appendix 3: Photostat 1, 2, 3.

¹¹⁰ A. Thompson, “Fatigue and Regeneration in reference to investigation of Library of St. Jerome by Carpaccio,” undated, unpublished, Laboratory of Design Correlation, REC 10 Box, Final Folder Thompson, Kiesler Archives, Vienna. “Measurements of work motion and rest by eye hand and foot expressed in differentials of speed, energy consumption, types of progression, alternation of

furnishing examples including a circular desk at Harvard Law Library and several examples of mobile, flexible, and modular furniture published in Herbert Hoffmann's treatise *Gute Möbel* and Adolf G. Schneck's *Das Möbel*.¹¹¹ [Fig. 3.32, Fig. 3.33]

In all of these investigations, Kiesler and his students gave attention to the study of moving bodies and systems in order to create readily accessible elastic constructions. Many of the furniture designs that the students investigated had varied mechanisms to fold and unfold a series of surfaces into multiple and extended parts. [Fig. 3.34, Fig. 3.35] Joinery and hinging systems became extremely important, as did the interactive study of direct access to the storage devices. [Fig. 3.36] They drew several charts and diagrams, which included the study of the body reaching, extending, standing, and bending to use books at different times for different purposes. [Fig. 3.37]

The body and furniture correlative in motion was vital to Kiesler's project. Any "maladjustment between the body and some parts of its environment, external or internal," Kiesler argued, would "impair the efficiency of the body," leading to increased "physical resistance," "unbalanced health," and in the extreme if not absurd case "a progression from fatigue to death."¹¹² "Architecture," Kiesler explained, is "a tool for the control of man's [physical and

activities, simultaneity of activities in regard to one action alone, facilities of relaxation, occasions of greatest strain, period pauses. Measured calculation for labor performance in foot/pounds and energy consumption (total 4,339,200,000ergs)."

¹¹¹ Frederick Kiesler, "Energy & Time - saving Circular desk at Harvard Law School," Laboratory for Design Correlation, REC 07 Box, Box Folder #6, Kiesler Archives, Vienna. See also Frederick Kiesler, "*Gute Möbel*, H. Hoffmann p. 67, 1934 [Hand Sketch and notes]," "*Gute Möbel*, Herbert Hoffmann 1934 p. 37, Temporary active storage magazine and book storage," "Unit book shelving units used singly or in pairs from *Gute Möbel* p. 76 (Book 1) - inexpensive - elasticity - possibility of expansion - mobile + adaptable to new settings," "For active reference, *Architects Journal* vol. 85 p. 815," "Disappearing Bookshelf: Bookshelf designed by Ralph Walker for exposition at Art Museum, *Pencil Points* June 1934, p. 302," Laboratory for Design Correlation, REC 07 Box, Box Folder #6, Kiesler Archives, Vienna. See also "*Das Möbel* AG Schneck p. 13-15 shelves," "Page 170 fig 69, Interior of Library at U. of Leyden 1610, Larger number of books, 40-48 in. each case," "Page 264 fig. 116, Bookpress in school at Bolton Lancashire - 1694," "*Gute Möbel*, Herbert Hoffmann 1934, p. 64, 15, wire, metal, desk, chair," "*Gute Möbel*, H. Hoffmann 1934, Active or Temporary reference, Tubular chromium p. 61, 13," Laboratory for Design Correlation, REC 07 Box, Box Folder #5, Kiesler Archives, Vienna. These images are predominantly hand sketched with notes. For original images see Herbert Hoffmann, *Güte Möbel: Zweite Folge* (Stuttgart: Julius Hoffmann Verlag, 1934) and Adolf G. Schneck, *Das Möbel als Gegrachsggegenstand* (Stuttgart: Julius Hoffmann Verlag, 1929).

¹¹² (CBM, 14); see also (CB 65).

mental] health, its degeneration and re-generation.”¹¹³ Architecture he believed brought into alignment with the body-in-motion guarantees a harmonious interaction between man and his technological environment; it engages the body in balanced action with a healthy exchange of forces, that “mitigates physical and psychological maladjustments,” he believed, “by protection against fatigue (preventive) and by relief of fatigue (curative).” (CB 65, 66) Architecture he argued functioned as a generator for the individual by protecting and replenishing one’s energy forces; it served to energize both the *physis* and the *psyche* of the dweller as it coordinated the habits of everyday actions on a molar and molecular level. “If I use a chair” Kiesler maintained “I accumulate its energy, I add it to mine; ...When we use a chair we absorb its energy.”¹¹⁴ Pseudo-scientific theories of energy transfer between technology and the body situated in an ever-changing adapting field suggested to Kiesler (similar to Mumford) a state of pure automatism where the technological surface of elastic construction *modulated* in response to the body to control equilibrium and maintain good health.

Health concerned architects at least since Vitruvius and Alberti emphasized the need for healthy building climates, and for Kiesler science introduced new technologies that he believed would ensure more healthy and productive lives.¹¹⁵ Similar to Mensendieck and Mumford, Kiesler had hoped that bodies correlated to their environment would form everlasting symbiotic relationships. Where Mensendieck had systematically taught bodies to move with natural elasticity in response to their environment—ensuring lasting “beauty and health”—Kiesler scientifically studied the body to design furniture that would move in correlation to the elasticity of bodily actions.¹¹⁶ As Mumford believed coordination between human needs, bodily desires, and machines would ensure an organic society of collective economy and leisure—without social

¹¹³ (CB 66) Health was central to Kiesler’s discourse, and as Beatriz Colomina has recently argued both Kiesler and Le Corbusier were “obsessed” with architecture as a means to achieve good health. For Le Corbusier, “the house is first and foremost a machine for health, a form of therapy,” she argues. See Beatriz Colomina, “The Medical Body in Modern Architecture,” *Anybody*, ed. Cynthia Davidson (Cambridge: MIT Press, 1997).

¹¹⁴ Kiesler, “From Functional Design to Service Design,” 1936.

¹¹⁵ See Leon Battista Alberti, *De re aedificatoria* (1452; first printed in 1485); English translation, *On the Art of Building in Ten Books*, tr. Joseph Rykwert, Neil Leach, Robert Tavernor (Cambridge: MIT Press, 1988) 9. See also Vitruvius Pollio, *de Architectura*; English translation, *The Ten Books on Architecture*, tr. Morris Hickey Morgan (Cambridge: Harvard University Press, 1914) Chapter 1, pg. 10.

¹¹⁶ See Mensendieck, *It’s Up to You*, 293.

distinctions—Kiesler designed architecture to ease everyday life by purportedly dissolving subject object relations between bodies and their surroundings to energize the dweller. For Kiesler, Mense dieck, and Mumford—fluid continuity of the body-machine complex ensured bodily control in the service of good forms of productive health.

To achieve healthy biotechnical environments, Kieser and his students made extensive observations of the body in its relation to objects of everyday use. [Fig. 3.38] Kiesler's assignments had students observe the correlations between particular life-actions and their surroundings, to be documented on "well-integrated charts, showing all dimensions in their relation to the human figure".¹¹⁷ They were asked to discriminate "between the degenerative and the regenerative aspects of life-action" in order to set up new standards for a new reality.¹¹⁸ This included careful study of "the contact points and areas" between the tools and multiple positions of the body "including the hardest and softest points; superimpose[d with]... additional areas for shifting, manufacture, and tradition."¹¹⁹

Kiesler's assignments relied on time-motion studies similar in intent to those invented by Muybridge and Marey, which were then later advanced by Frederick Taylor and Henry Ford. However, unlike Fordist practice that attempted to mold the body to the specialized demands of an efficient technological mechanized work force, Kiesler searched to develop "variation in technology" that might adapt to the needs of an evolutionary process of socio-economic changes. (CB 64) From "deficiency" to "efficiency", Kiesler charted how "actual needs are not the direct incentive to technological and socio-economic changes," instead he remarked, "needs are not static: they evolve." (CB 64) [Fig. 3.39] Kiesler proposed an organic architecture of the living machine (and not a machine for living) that might *modulate* to man's motion in time as a consequence of his societal and bodily habits.

Kiesler was not interested in a functional static architecture, where the body strains to move in a fixed environment, but instead in a biotechnological architecture that shifts the strain

¹¹⁷ Frederick Kiesler, "The Biotechnical Approach, Program, Exercise," n.p., n.d., 1, Design Correlation Laboratory, REC 10 Box, Kiesler Archive, Vienna.

¹¹⁸ Ibid.

¹¹⁹ Ibid.

from the human being to the tool.¹²⁰ He wanted technology to engage the body in action in order to create a balanced environment of comfort and discomfort—relaxation and extension—contracting and expanding in a correlative time-space continuum. The mobile-home-library was his first attempt to achieve that goal.

Mobile-Home-Library

The Mobile-Home-Library constructed by professional manufacturers in coordination with Kiesler's students Armand Bartos, Tukey, Kaufman, and Thompson, appeared flexible and adaptable for different users.¹²¹ [Fig. 3.40] With shelf sizes increased to 15 inches with angular shape, it could accommodate more types of books with varied arrangements. (CB 71) Each unit could rotate 360 degrees, and be easily adjusted and transported between locations. (CB 71) [Fig. 3.41] Additional units could be fit together or be taken apart; the home library was designed to physically engage the body in motion. Three types of joints were custom designed to achieve varied action.¹²² [Fig. 3.42, Fig. 3.43, Fig. 3.44] A tubular system of chromium plated steel construction telescopically extended to create more space for additional units.¹²³ Units could be stacked beside each other flat against a wall or float in space upon a circular wheeled track. In

¹²⁰ (CBM 32); "Functionalism shifts the strain from the technological tool to the human being: Biotechnique shifts the strain from the human being to the tool," wrote Kiesler.

¹²¹ The Mobile Home Library was constructed in New York by Thom's Cabinet Shop on 1st Avenue, EGLI Inc. on 17th Street, Bent Steel Section Inc. on 37th Street on Long Island, United Metal Work Co., and Grand Chromium Plating Co. on Thompson Ave in Long Island City. See A. Thompson, "Construction notes for Mobile Home Library, Jan 23, 1939," and "Report Fri. Dec. 2, 1938 from Thom's Cabinet Shop," and "Dec. 13, 14, 1938 Grand Chromium Plating co.," Design Correlation Laboratory, REC 10 Box, Final Folder Thompson, Kiesler Archive, Vienna. See also Mobile Home Library Folder, Kiesler Archive, Vienna; Thompson took over 125 small photos on the home library in its construction, now held in the archive.

¹²² See "Laboratory of Design Correlation," *Columbia University School of Architecture Brochure*, Columbia University School of Architecture, New York, 1939-1940, 124, School of Architecture Collection, University Archives and Columbiana Library, Columbia University, New York. For additional photographs, see also Mobile Home Library Folder, Kiesler Archive, Vienna.

¹²³ As Thompson recorded: "Thom's Cabinet Shop [chestnut shelving units] Summary: Thom's Cabinet Shop; shelves, panel divisions, top shelves, flaps, top, wood and assembly. Durable Iran Craftsmen; tabs, bending, filing, satin finish on aluminum sides for units, pipe frames, bending, cutting joint angles, welding, cleaning, blocks and wheel plus streamlined covers for end wheels, brace. EGLI Co. Inc.; hinges, two kinds, rods, aluminum, two kinds, and finishing, flaps two kinds, aluminum, Plexiglas, and finishing. Grand Chromium Plating Co.; frame, chromium plating, preparatory processes, blocks, caster parts, brace, gun-metal finish." For more on materials and manufacture see Thompson, "Report Fri. Dec. 2, 1938".

addition, as Kiesler noted, “by designing each unit of the library—as well as the total assembly—according to the physical limitations of man,” the storage system would reduce strain on the user to a minimum. (CB 71) Students tabulated and charted use frequencies and accessibility requirements alongside contact cycle studies to optimize mass customization for future manufacture.¹²⁴ [Fig. 3.45] Motion in time was designed into the physical construction of the tectonic body as a temporal structure manufactured to house books or perhaps in the future microfilm, television, optophonics or what have you. (CB 67-68) Temporality was built into the structure.

As a built-work, however, the Mobile-Home-Library had its limits. [Fig. 3.46] By its own chestnut wood construction, chromium plated steel, aluminum sheathing, and metal joints that could only be as flexible as prescribed by the original design, it could only grow to a certain extent; it could only accommodate a limited typology of books; it could not be designed for unforeseen changes in lifestyle or technology, and it could expand only linear against a wall or curvilinear upon the floor. Unable to adjust to changes in style, color, or material fetish, it was an object limited and characterized by its time and ultimately could not fully adapt to changes in environmental conditions.

¹²⁴ The first shelf was constructed 18 inches from the ground, and the highest shelf was 4'-0" high. Each rotating shelf unit had a front and back, 2'-6" wide. Newspapers, magazines and records were to be stored in the bottom cabinet, and less used books could be placed on the back unit of each rotating shelf. Each shelf had sponge rubber inlay which kept the books in place. Shelf heights were only 10" high and not adjustable. Dust flaps were available in clear plastic or colored metal. See (CB 74-75). During construction additional contact cycle studies were carried out to optimize future production. According to Thompson: “Specific: Organ-activity and relative time correlation of procedures in bending operation of aluminum sheet sides for home library storage units. Elements: 2 men, co-worker machine and environment, aluminum. Constituents: 4 eyes, hands feet and two torsos; Dies, foot lever, hand lever, wrapping paper, 3 trucks, skylight, concrete floor; 4 sheets to be bent on 17-1/16" radius. Bending operation broken down into bending side edges of aluminum, rough bending sheet as whole, precision bending involving re-check on blueprints. Typical phases of organ-activity and Relative time in seconds. For example picking up 4 aluminum sheets and carrying towards machine – 4 sec. Turns, 1 sec; reaches for template, 3 sec etc. Summary 39 phases 49 minutes. Analysis of possible fatigue factors: concrete floor, foot pedal, no pressure gauge, hand lever too short to be easily reached without stopping machine; no foot space at bottom of machine; no place to put template during operation.” In addition to these studies which helped assess design opportunities for improving ease and efficiency, Thompson made reports in Oct 1938 on *Industrial Hygiene for Engineers and Managers* by Carey P. McCord; *Workers Emotions in Shop and Home* by Rexford B. Hersey, *Muscular Movements in Man* by AV Hill and *You Must Relax* by Edmund Jacobson. See Thompson, “Contact Cycle Study Oct. 31 1938,” and “Another Contact Cycle Study at United Metal Work Co. Oct. 25, 1938,” Design Correlation Laboratory, REC 10 Box, Final Folder Thompson, Kiesler Archive, Vienna.

Kiesler did realize the limitations of *actual* construction however, and incorporated a theory he described as “time-zoning” into his Design-Correlation project. (CBM 93) Time-zoning initiated during the design process recognizes the temporal limitations built-in to any technological production. It considers the life-span “according to the stresses and strains of usage,” and decay of its parts on a sliding scale from durability to disposability. (CBM 64) Life cycles and maintenance schedules are thereby a part of design. A “time-zoned process of assimilation within the present domains of industry” is essential Kiesler remarked; “it replaces the principle of static change...[with] the principle of continuous adaptation.” (CBM 95) Despite its actuality, the mobile-home-library was intended to continuously adapt to new fields. [Fig. 3.47] It was considered a standard type that would evolve variations based on observation, habituation, education, and invention. “Life-zoning of Building Materials” creates products that are designed to achieve a state of perpetual becoming. (CBM 64)

Kiesler’s time-zoning process attempted to design products appropriate to the limits and extents of their use that could at the same time adapt to ever-evolving needs and environmental changes. Kiesler hoped to produce designs that would not assimilate the body to repetitive standards that wasted human resources and “impede[d]” “technological progress,” but instead supported innovative new building processes. (CBM 85) Kiesler opposed habituating the public to simulated standards, which he believed perpetuated a cultural lag in favor of pure consumer profit. (CBM 85) Instead he hoped to “properly coordinate...manufacturing processes” in “biotechnical laboratories” as “the group expression” of the “consumer, the designer, the manufacturer, the distributor, [and] the salesman” to *optimize* the production capacity of the masses towards endless innovative progress. (CBM 93)

Kiesler believed technological progress that aimed towards seamless continuity between bodies and machines would achieve human fulfillment. Kiesler did not lament the loss of human experience that might occur in the process (unlike Bergson). Kiesler put his hope in an idea of “continuous infinite progress” as Giorgio Agamben might criticize, even though technology

expropriated humanity from its “human dimension” to evolve with machines.¹²⁵ In the 1930s and 1940s, Kiesler readily supported conflating bodies and machines in the service of technological materialism, perhaps in contradistinction to any guiding moral, vital, or humanist values he may have had.

Kiesler proposed a biotechnological model of architecture that aimed to maximize “capital power,” as he said through new forms of production. Kiesler embraced capitalism in service of “MASS PRODUCTION” but “NOT” as he argued “PRODUCTION FOR THE MASSES.” (CBM 90) Kiesler promoted a biotechnic lifestyle expressly different from Mumford’s misguided communist fantasy of mass leisure. For Kiesler, healthy coordination between the body and its environment ultimately served to improve mass productivity through fine-tuning the body-machine complex to work to its *greatest capacity*. Kiesler promoted a society of perpetual work in the service of mass markets for the “ultimate purpose” to enable man to construct higher levels of continuous productivity. (CBM 68, 78, 93) In Kiesler’s biotechnic system, leisure was no longer a reward for the work, but as he believed an integral component of continuous satisfaction. (CBM 76) Kiesler’s goal was to form a “BIOTECHNICAL minimum STANDARD” for every member of society that resolved in the construction of satisfyingly *productive* lives. (CBM 78)

Social Design

Perhaps with this goal in mind, during the third and fourth year of the laboratory, Kiesler’s research projects incorporated more intensive investigations of the time-motion study as well as biological and evolutionary approaches to social design.¹²⁶ Kiesler discussed writings by Professor Walter Rautenstrauch of the Department of Industrial Engineering at Columbia University on “The Role of Organization in Attaining Optimum Productivity,” which included

¹²⁵ See Giorgio Agamben, “Time and History,” *Infancy and History: Essays on the Destruction of Experience* (New York: Verso, 1993) 97.

¹²⁶ See Frederick Kiesler, “Report on the Work of the Laboratory for Design Correlation Nov. 13, 1939,” unpublished, 6-8, Design Correlation Laboratory, REC 03 Box, Laboratory for Design-Correlation Activities/Reports, Kiesler Archive, Vienna; (hereafter cited in text as 3LR). See also “The Way to Work, from Karl Weule: on Professor Buecher’s book ‘Work and Rhythm’ (1909) and ‘Origin of Economy,’” Laboratory for Design Correlation, REC 08 Box, Series 11, 1-10, Kiesler Archive, Vienna.

studies of pattern organization, labor, and kinematics.¹²⁷ Professor of Engineering at Columbia University, Mario Salvadori provided several lectures on “Time-Motion”, which covered topics on the origins of motion study, movement analysis, and Taylorism in the workplace and in housing.¹²⁸ Kiesler presented numerous films and lectures that covered the theory of evolution by Lamarck, Darwin, and Morgan. (3LR 8) In addition, students studied films of nervous systems, polyelectrophysiology, and radioactive rays. (3LR 7)

Kiesler and his students explored the human autonomic nervous system and its relationship to social conditioning. In their lectures on Time-Motion, they observed how architecture and industrial design not only facilitated human action, but also trained the habits of everyday life. Salvadori taught students charting methods to quantify time spent on habitual actions like smoking a pipe or packing luggage for example.¹²⁹ [Fig. 3.48, Fig. 3.49] Students diagrammed a series of movements into a system of graphic demarcations that symbolized automatic motions of the body charted as discrete actions. Salvadori taught the students to observe how the body learns to adjust to its environment, and how it can become “a slave to habit”.¹³⁰ He then taught them how to ask critical questions as to: “What is to be done? Who is to do it? Why [and When] should [and Where is an] operation be performed?”¹³¹ They then applied their analytical strategies to study a factory worker in relation to his foreman and management in the construction of a San Francisco housing project, and compared their results to the

¹²⁷ See Walter Rautenstrauch, “The Role of Organization in Attaining Optimum Productivity: Reprint of Synthese Maandblad voor het geestesleven van onzen tijd April 1939: Paper submitted to the 1938 Study Conference of the International Industrial Relations Institute, The Hague, on the subject of Productivity and Standards of Living as Influenced by Industrial Relations. By Columbia Professor of Engineering Walter Rautenstrauch,” Laboratory for Design Correlation, REC 08 Box, Series 11, 1-13, Kiesler Archive, Vienna (hereafter cited in text as WR).

¹²⁸ See Mario Salvadori, “Time and Motion Study Lectures,” in Frederick Kiesler “Fourth Report on the Laboratory of Design Correlation,” n.p., February-March 1940, 7, Design Correlation Laboratory, REC 03 Box, Laboratory for Design-Correlation Activities/Reports, Kiesler Archive, Vienna (hereafter cited in text as 4LR). See also Henry Balisky, “Theory of form, function, and structure,” 3/10/41, Laboratory for Design Correlation, REC 08 Box, Series 11, 1-3, Kiesler Archive, Vienna. See also D. Newman, “Report on ‘Time-Motion’ Lecture by Mr. Salvatore,” n.p., n.d., Laboratory for Design Correlation, REC 08 Box, Series 11, Kiesler Archive, Vienna.

¹²⁹ See unpublished report and charts by Henry Balisky, “Time & Motion Study,” unpublished, undated, Laboratory for Design Correlation, REC 08 Box, Series 11, Kiesler Archive, Vienna. See also Newman, “Report on ‘Time-Motion’ lecture by Mr. Salvatore.”

¹³⁰ Newman, “Report on ‘Time-Motion’ lecture by Mr. Salvatore.”

¹³¹ Ibid.

productivity of a Seattle prefabrication housing plant.¹³² Students examined both the structure of the work and social engagement on the job—!“social relation problems involved: salaries, unions, [and] unemployment” studied through both “Macromotion” and “Micromotion” investigations, Salvadori explained.¹³³ From these studies of how bodies moved habitually in response to both their physical and social environments, students proposed ways to improve productivity and profitability. Alongside proposing ideal social and economic conditions, they assessed *elastic* methods to improve the *plastic* habits of bodily movements by rethinking factory set-up and by designing new tools.¹³⁴ In the Laboratory of Design Correlation, students studied the habits of bodily actions alongside realities of social conditioning to propose new environments where mass production might proceed more fluidly—autonomically—if not effortlessly.

As James had observed at the turn of the 20th century bodily habits are effectively “plastic,”¹³⁵ they are “weak enough to yield to an influence, but strong enough not to yield all at once.” (PP 105) In habit, James understood pure sensation move us in the effortless custody of automatism through a series of successive nervous events that have grown to the modes for which they are accustomed.¹³⁶ Currents moving through deepened paths of our nervous system affect our motor systems and guide our daily actions as if a “continuous stream”.¹³⁷ “The process, in fact, resembles the passage of a wave of ‘peristaltic’ motion,” he argued. (PP 116) “The phenomena of habit” James concluded, “in living beings is due to the plasticity of the organic materials [especially our nervous tissue] of which their bodies are composed.” (PP 105) We move in continuous flow through everyday life unencumbered by conscious perception until we encounter disruption in our environment. Changes in accustomed perceptions disrupt the

¹³² Salvadori, “Time and Motion Study Lectures,” 7. See also Balisky, “Theory of form, function and structure,” 1-3.

¹³³ Ibid.

¹³⁴ Balisky, “Theory of form, function and structure,” 1-3.

¹³⁵ (PP 105). Mensendieck also described the movement of the body in its optimal muscle development of fluid grace as *tonic plasticity*. The “plastic” and “elastic” body were terms used to describe the ideal body-in-motion in the early part of the 20th century. See Mensendieck, *Its Up To You*, 10.

¹³⁶ (PP 107, 108, and 112). James referred to William Benjamin Carpenter, *Principles of Mental Physiology* (Bristol: Thoemmes Press, 1874) 339-345, for the study of nervous systems that grow to modes to which they are accustomed.

¹³⁷ (PP 107, 114). James famously defined his theory of consciousness as a “stream of thought” in Chapter 9; see (PP 224-290).

continuity of our flow. (PP 107) Where shifts occur in perceived conditions—we develop “changes of habit”. (PP 107)

The focus of Kiesler’s laboratory was to optimize the design of *plastic* environments that do not require bodies to change daily habits. They studied the body-in-motion to lend conscious attention to areas of discontinuity in order to modify the built-environment to diminish resistance and enhance the *natural* flow. Kiesler and his students understood that disruptions in the environment affect sensations and bodily actions. They attempted to mitigate disjunction by creating architecture that performed in continuous dialectic with evolving patterns of habits, sensations, perceptions, and actions. Kiesler employed temporal strategies to engage the affections and nervous events of dynamic life actions in order to generate organizational structures and systems most readily adaptable to organic life.

In their studies of evolutionary design approaches that might generate dynamic organizational strategies they became more and more interested in the sensory nervous system. Kiesler believed similarly to Rautenstrauch, we correlate in balanced unity with our environment through our nerves, both physically and psychically. (WR 2) Our nervous system senses our surroundings and coordinates necessary regulation. As every social organism is a living system, functioning in an ever-changing environment, its very existence depends upon its capacity to adapt. (WR 3) As Rautenstrauch argued, “social progress...will depend upon our ability to evolve a pattern of organized life which is an evolving pattern of organization of new functional equipments and expanding nervous systems to meet the needs of a constantly changing society.” (WR 9) Arguing against static exogenic organizations that rupture under the pressure of expanding civilizations—Kiesler and Rautenstrach believed organizational strategies must be developed that utilize endogenetic social and economic processes to survive.¹³⁸ Kiesler

¹³⁸ (WR 3); as Rautenstrauch argued, “biological evolution does not consist wholly in the successive additions of functional equipments, but rather in the proper balance of these with expanding external and internal integrating systems.” We adapt to continuously changing conditions through absorbing or releasing energy in a manner that relieves tension when effected by sudden change—or shock. The size of the system whether a person or global entity, remains balanced with the environment based on economic factors and environmental correlates. Energy is transferred from the environment to the individual and/or groups. The individual in turn rebuilds and refines his environments. The pattern of organization of the social organism affects their capability of healthy and successful evolution.”

understood that architecture is fundamentally an extension of our nervous system, a prosthesis designed to innervate social environments. His research explored the possibility to expand our external and internal capacities through adaptive flexible structures and extensive sensory systems.¹³⁹ Kiesler's temporalist strategy for an ecological practice studied our internal and external senses to derive *plastic* expression.¹⁴⁰

Vision Machine

Sensory perception, in particular vision, became an important focus of Kiesler's research in the laboratory. Kiesler had long been fascinated with perception since the 1920s, as demonstrated by his theater, film, and show window designs. In 1937, he published his advanced studies on optics in a series of articles in *Architectural Record*.¹⁴¹ Kiesler's article "Certain Data Pertaining to the Genesis of Design by Light (photo-graphy)," part 1 and part 2, outlined a history of visual perception and optical mechanics from Aristotle's observations of moving images to the manufacture of high-speed photography. By 1938, in an intensive effort to explore visual effects in architecture, Kiesler elaborated work in his laboratory to examine ocular perception.

Through their studies of St. Jerome's library, Kiesler and his students had observed that aesthetic and visual perceptions were central to the process of seeing and securing books from shelves. Kiesler pursued conversations with Bio-Physics Professor Selig Hecht at Columbia University to advance the laboratory's studies on vision. By 1938, Hecht visited the lab to lecture

¹³⁹ The Mobile-Home-Library for example explored the tactile expression of the body-in-motion alongside the role of vision in aesthetic practice to coordinate selection and access to books.

¹⁴⁰ The term *temporalism* was coined by historian and philosopher Arthur O. Lovejoy in 1908 in his essay "The Thirteen Pragmatisms" to define a group of scholars engaged in the study of temporal becoming. James, Bergson, Alfred North Whitehead, and Charles Renouvier were all temporalists who sought to explore perception in a world of perpetual flux. Temporalism is associated with the secular, worldly and non-transcendental. A Temporalist strategy for architecture would prove a pragmatic environmentalist discourse where design initiates from the central understanding that the world changes and evolves in time. See A.O. Lovejoy, "Thirteen Pragmatisms, *Journal of Philosophy*, 5, 1908; reprinted in *The Thirteen Pragmatisms and Other Essays* (Baltimore: Johns Hopkins University Press, 1963).

¹⁴¹ See Frederick Kiesler, "Design-Correlation: certain data pertaining to the genesis of design by light (photography) I-II." *Architectural Record*, v. 82, July 1937, 89-92; Aug. 1937, 79-84; and Frederick Kiesler, "Design-Correlation: from brush-painted glass pictures of the Middle Ages to [the] 1920's." *Architectural Record*, v. 81, May 1937, 53-59.

on the eye in connection with visual fluids and functions.¹⁴² Kiesler and his students then visited the Bio-Physics Department to view living retinas.¹⁴³ Most constructively, Hecht gave a short illustrated summary of the eye and nerve functions to the students.¹⁴⁴ Hecht's technical studies directly informed Kiesler's research on his now well-known "Vision Machine".

Kiesler's design for the Vision Machine attempted to clarify scientifically the mental and physical processes engaged in the visual arts. For Kiesler, "aesthetics in architectural design, (meaning the design of our daily environment)...is a problem too intricate to be solved by the method of art application" alone.¹⁴⁵ Instead, he insisted architecture required more rigorous design methods. Science arguably provided the most demonstrable results.¹⁴⁶

By 1938, preliminary designs for the Vision Machine were clearly outlined and students were researching with Kiesler to develop the techniques of its mechanism and manufacture. Engineers from Biolite, Bausch and Lomb, and Master Optical were consulted alongside lectures provided by educational experts in the field of ocular mechanics.¹⁴⁷ In 1940, Kiesler planned an

¹⁴² See "Dr. Hecht-visit," Mon. April 11, 1938, n.p., 1-2, Vision Machine Box, VM_eye + lens Folder, Kiesler Archive, Vienna. On recommendation by Dr. Ashley Montague, Kiesler first contacted Hecht March 22, 1938. At that time Kiesler and Thomson had already begun their study of the aesthetics of vision and wanted to know more about Bio-Physics and the various functions of the brain in response to various visual stimuli. See letter Frederick Kiesler to Professor Selig Hecht, March 22, 1938, n.p., Design Correlation Laboratory, Rec 10 Box, Correspondence: Model to be made Thomson, eye-brain, Kiesler Archive, Vienna. Thomson and Kiesler had also contacted Ah Waage Electrical Heating Devices for prices on an illuminated model of a human head. W.H. Forrest replied to them: "We have given this matter some thought and believe that what you desire may be accomplished by the use of either Neon light, or possible by means of transparent glass tubes thru which bubbles of colored liquid might be sent out from a central station by means of a pump and a distributor valve. Or it is possible that a combination of these two arrangements might work out to a better advantage." See letter Thomson to AH Waage, 27 Warren Street, Electrical Heating Devices, February 10, 1938, n.p., Design Correlation Laboratory, Rec 10 Box, Correspondence: Model to be made Thomson, eye-brain Folder, Kiesler Archive, Vienna.

¹⁴³ See "Dr. Hecht-visit," Mon. April 11, 1938, 1-2.

¹⁴⁴ Ibid.

¹⁴⁵ Frederick Kiesler, "Vision Machine: Memorandum-by Frederick Kiesler-1-," n.p., n.d., Vision Machine Box, VM_descriptions & Memorandum Folder, Kiesler Archive, Vienna.

¹⁴⁶ A shift to science as a model for design research not only suggests the application of more rigorous methods, but the potential for greater funding, wider popular interest, and intellectual validation.

¹⁴⁷ Kiesler and Thomson contacted Gothom Optical Instrument & Machinery Corp.; Claude Neon Inc. (for electrode connection, transformer, and generator); AH Bowie & Sons Monuments-Mausoleums Granite (for granite base); Master Optical co. (for projection device); Bausch & Lomb Optical Co. (general advice); Cooperative Engineering Co. and Dept. of Mechanical Engineering City University, NY (for a landscape lantern cabinet—a table on rubber pads and swivel rollers); See letters Frederick Kiesler to AH Waage, February 10, 1938; William Dubin to

advisory board to support the project, which included leaders from New York and Boston in the fields of chemistry, biology, anatomy, education, anthropology, natural history, psychology, and brain studies.¹⁴⁸ Kiesler intended to build his Vision Machine to analyze the physical and aesthetic mechanisms of the sensorial body incorporated within its environment, and he hoped to publish widely his findings.

Kiesler designed his Vision Machine ultimately to simulate human perception. [Fig. 3.50] the Vision Machine attempted to show how our networks of nerves correlate visual and tactile information between our mind, eye, body, and the environment. It was modeled on the study of cathode tubes and x-ray machines, and was operated through a rotary switch that generated a spark which set the machine to motion.¹⁴⁹ [Fig. 3.51] Gyration continuously, the Vision Machine was intended to demonstrate the complete creative cycle of the imagination. [Fig. 3.52]

To be constructed using an electrostat, brass balls, blown glass tubes, colored gases, and electric wires, the Vision Machine appeared not altogether different from a push-button

Frederick Kiesler, April 22, 1938; Frederick Kiesler to Mr. McDermott, April 19, 1938; Letham Bowie to Frederick Kiesler, April 15, 1968; Frederick Kiesler to Master Optical Co., April 18, 1938; Frederick Kiesler to Baush & Lomb Optical Co., April 14, 1938; WA Johnson to Professor GB Karelitz, April 11, 1938, n.p., all in Design Correlation Laboratory, REC 10 Box, Correspondence: Model to be made Thompson eye-brain Folder, Kiesler Archive, Vienna. Thompson and Kiesler also contacted Samuel Cooley (Physics Building), Frank Eck (Glass blower), Dr. Colin G. Fink (Chemistry) Metropolitan Mechanical Display (Mr. Pfeiffer), N.C. Schelesnyak (Physics Building – elec. Engineer & Anatomist), Dr. Thode (Physics Building – Chemistry Dept.). See (2LR 6).

¹⁴⁸ These members included Dean Arnaud, Professor Rautenstrauch, Professor Ralph Linton, and Dean Harold Urey of Columbia University, in addition to Professor Ashley Montague of Hahnemann Medical College in Philadelphia; Professor Walter Klingman of the Neurological Institute Medical Center of New York; Dr. Waldemar Kaempffert—the science editor of the New York Times; Victor D’Amico, Dept. of Education MoMA NY; Prof. Ralph Linton Dept of Anthropology Columbia University; Howard Myers, Editor in chief, *Architecture Forum* (*Time* and *Fortune*, NY); Prof. Lyman Bryson Teachers College NY (elementary and advanced education); Dr. Russell Potter (educations films); Dr. William K Gregory Curator American Museum of Natural History; Professor Gardner Murphy Dept of Psychology City College; Professor Dr. Dundy Brain Specialist Harvard University; see Frederick Kiesler, “Advisory Board,” n.p., n.d., Vision Machine Box, VM_descriptions & Memorandum Folder, Kiesler Archive, Vienna.

¹⁴⁹ See Frederick Kiesler, Sketch, “Anode, Kathode, Sense Organs, Object,” n.d., Vision Machine Box, VM_Conceptual Sketches Folder, Kiesler Archive, Vienna; as cited in the image: “Do we see in a two-way system? Or only by reflection? Or do ray’s from the Eye-Brain Meet (so to say in a conductive vacuum) the Generation of light (-heat) from the object and Write in order to produce an illusion of the object? Why is the vision always smaller than the object it sees?” See also “Dr. Hecht-visit,” Mon. April 11, 1938, n.p., 1-2: Hecht made sketches for Kiesler on human eye, x-ray cathode, and television electron tube as all being effectively the same on Columbia University letterhead, he also included a technical sketch on “Dioptric Mechanisms // rays converge at a pt. known as principal focus. Eye 1) sensory surface or retina 2) Dioptric mechanism to protect external image on sensory surface.”

exhibit at a local science fair.¹⁵⁰ It worked by reflecting light off an object, for example—an apple, which was then drawn into focus by an ocular aperture.¹⁵¹ The reflected light was then projected onto an apparatus that stimulated the flow of bubbles and gases through a network of tubes representing nerves and bodily systems.¹⁵² An excess of images theoretically streamed forth from within the machine through the use of animation film technology—ranging from a series of art works, which included images from the blind, insane, and small children.¹⁵³ [Fig. 3.53] These images provided a visual depository of allied mental processes that simulated recognition, subconscious conflicts, and associate, prejudice, and previous experiences. *Selection* then occurred from the array of images presented in accord with bodily affect and environmental conditions to create a unified image that was then reflected back onto the initial object—the apple.¹⁵⁴ [Fig. 3.54, Fig. 3.55]

Intended to show how perception is subjective—temporal and personal—the Vision Machine projected choice selections from various potential users onto a screen for further study and analysis.¹⁵⁵ Kiesler boasted his Vision Machine would replace Sigmund Freud’s couch, chair, pencil and pad apparatus commonly used in psychoanalysis, because the Vision Machine could be used to take “direct records of dream images” without interference from the dreamer or the therapist themselves.¹⁵⁶ The Vision Machine was a Dream Machine able to take snapshots of unconscious perception—what Kiesler called the “after-image of a memory flash”.¹⁵⁷

¹⁵⁰ See “Report March 30, 1938, Machine Proposal – for model” n.p., n.d., Vision Machine Box, VM_ tubes Folder, Kiesler Archive, Vienna.

¹⁵¹ See “Brief Description of Vision Machine.” n.p., n.d., Vision Machine Box, VM_ descriptions & Memorandum, Kiesler Archive, Vienna.

¹⁵² See “Report March 30, 1938, Machine Proposal – for model.”

¹⁵³ Kiesler investigated using animation technology for both picture and sound projection in the laboratory for the vision machine project. See “A Means of Producing Synthetic Sound on Film.” and “A Method of Producing Animate Abstract Images.” n.p., n.d., Vision Machine Box, VM_ A Method of Producing animated abstract images and synthetic sound on film, Kiesler Archive, Vienna.

¹⁵⁴ See “Brief Description of Vision Machine.”

¹⁵⁵ See “Vocal Explanation To Accompany Model.” n.p., n.d., Vision Machine Box, VM_ descriptions & Memorandum, Kiesler Archive, Vienna.

¹⁵⁶ Frederick Kiesler, “Manuscript: Dream-Recorded,” n.p., n.d., 10, Laboratory for Design Correlation, REC 10 Box, Kiesler Archive, Vienna.

¹⁵⁷ Frederick Kiesler, “Some Testimonial Drawings of Dream Images,” VVV Almanac, ed. David Hare, New York, 1942, 29.

Although an avid reader in the late 1930s of Freud's basic writings, similar to Bergson and James, Kiesler dismissed interpretive methods of dream therapy in favor of popular scientific research on the inner workings of the mind and vision.¹⁵⁸ Kiesler hoped to use specifically an electroencephalogram or cathode-ray tubes, electrodes, and an oscillograph to record on either light-sensitive materials or continuous rolls of automatically flowing paper—latent energies, excitations, and phosphorescence from deep inside the unconscious brain.¹⁵⁹ He hoped successive visual recordings would produce more accurate images from our memory and thereby evade personal bias of the therapist or patient themselves.¹⁶⁰ In his unpublished "Manuscript: Dream-Recorded," Kiesler detailed his experimental research to observe direct dream images without the intermediary action of conscious perception.¹⁶¹

Probing the mechanisms and influences of the conscious and unconscious in the laboratory, Kiesler and his students attempted to demonstrate the art of memory and perception. They supplemented their knowledge with a wide range of texts and contemporary abstracts on human physiology and psychology.¹⁶² They examined the process of memory recalled from the art of automatic writing, hypnosis, and dream theory.¹⁶³ In addition, they generated a history of imagery from early cave dwellers to Marcel Duchamp's paintings to clarify the interrelationship

¹⁵⁸ Ibid. 27-28. Kiesler refers to the writings of Professor Percy Goldthwait Stiles published by the President and Fellows of Harvard College, 1927; as Kiesler argued in the text: "The material for this collection of dreams was begun in the fall of 1927. The dreamer had just graduated from a scientific school and entered upon a year as assistant in a biological laboratory...He is not at all satisfied with his power to recall the scenes and activities of the night..." See also Henri Bergson, *Le rêve*; English translation *Dreams*, tr. Wade Baskin (New York: Baker & Taylor, 1914); see also (2PP 294).

¹⁵⁹ Kiesler, "Manuscript: Dream-Recorded," 6-7. For similar studies on phosphorus and thought, see (PP 101).

¹⁶⁰ Kiesler, "Manuscript: Dream-Recorded," 10.

¹⁶¹ Kiesler, "Manuscript: Dream-Recorded," 6-10.

¹⁶² See transcribed texts with quoted excerpts for Kiesler's laboratory by Edwing G. Boring, *The Physical Dimensions of Consciousness* (New York: Century Co., 1933) and Morton Prince, *The Unconscious: the Fundamentals of Human Personality Normal and Abnormal* (New York: The Macmillan Company, 1921) as held in the Vision Machine Box, VM_Research excerpts Folder, Kiesler Archive, Vienna.

¹⁶³ See transcribed texts with quoted excerpts for Kiesler's laboratory by Clark Hull, *Hypnosis and Suggestibility: An Experimental Approach* (New York: Appleton Century Co., 1933); E.R. Jaensch, *Eidetic Imagery* (New York: Harcourt, Brace and Co., 1930); Rene Warcollier, *Experiments in Telepathy*, ed. Gardner Murphy, tr. Josephine Gridley (New York: Harper and Brothers, 1938) as held in the Vision Machine Box, VM_Research excerpts Folder, Kiesler Archive, Vienna.

and physio-psychological sources of the origins of art.¹⁶⁴ These studies enlivened their work on the Vision Machine and served to elaborate a series of diagrammatic sketches of environmental, hereditary, and intuitive forces acting on the mind and body in the art of *plastic* creation.

Kiesler and his students derived their own map of the mind and invented a model of sensory perception where the *physis* and *psyche* coexist within a continuous field of environmental and technological forces. [Fig. 3.56, Fig. 3.57, Fig. 3.58] They considered experience osmotic, habitual, and sensual, where qualities and intensities passed through semi-permeable surfaces of networked internal and external nervous systems. Manufactured technology coexisted with the body—bound in continuum. [Fig. 3.59] The visual apparatus made cuts from the surrounding immanent field of matter, only to reconstitute through memory unique spatial perception. Space was understood as a construct of recognition as Kiesler proposed, for “what appears to be space is [simply] an illusion of it, merely a succession” of transpiring sensorial images coordinated in time.¹⁶⁵ [Fig. 3.60] Succession is so rapid, conscious perceptions seem retrospective. Events are not known in the moment, but choreographed in bodily affect—like a quality, intensity, or feeling. Spatial perception is habitual.

Kiesler’s experiments on the Vision Machine hoped to simulate and explain processes of memory, perception, and bodily affect. He pursued study of intense and qualitative sensations experienced through images of surrounding environments to examine how perceptions are translated in the eye to nervous impulses that move the body. Kiesler attempted to study how bodily nerves network together consciously and unconsciously to perform creative acts.

¹⁶⁴ See images: cave drawings of prehistoric man (la Greze Bison in the Art of the Cave Dweller by Baldwin Brown), Assyrian wall paintings, Fresco by Giotto (Winged, Victory, Boccioni), Painting by Piero della Francesca (the Suitors of Mary Kneeling in Prayer, Padua from Osvald Siren Giotto and Some of his followers), painting by Raphael (The Madonna in the meadow by Adolf Paul Oppe), Van der Meer, Turner, Seurat (Sunday afternoon), Cezanne (Baccanals, from Rhythmic Form in Art by Irma Richter), Picasso, Mondrian (1921, from *Cubism and Abstract Art* MoMA), Miró (1933 from Modern Masters 1940 A), Dali (Endless Enigma), Marcel Duchamp (Boccioni before Duchamp—unique forms of continuity in Space 1913 from *Cubism and Abstract Art*), all held in Vision Machine Box, VM_Descriptions & Memorabilia Folder, Kiesler Archive, Vienna. See also Frederick Kiesler, “The Vision Machine,” Vision Machine Box, VM_Descriptions & Memorabilia Folder, Kiesler Archive, Vienna

¹⁶⁵ Frederick Kiesler, original sketch, Vision Machine Box, VM_Iconographic Images Folder, Kiesler Archive, Vienna.

Similar to Bergson, in *Matter and Memory*, Kiesler studied the body as a *zone of indetermination*, as a screen that makes cuts in a field of excess images through choice selections. As Bergson understood, “consciousness – in regard to external perception – lies in just this choice.”¹⁶⁶ Subjectivity and personality are disclosed through perceptions that form actions. Personality and subjectivity exist between performing actions and the affective feelings of the body as “a chain of nervous elements.” (MM 61, 64) Affection thereby Bergson explained is “one with the necessary modifications to which, in the midst of the surrounding images that influence it, the particular image that each one of us terms his body is subject.”¹⁶⁷ Affection is the seat of personality and subjectivity that makes us who we are separate from the world around us. We exist by our affects known through our actions that define our subjectivity as a liminal surface between our perceptions and needs.

Bergson, James, and Kiesler all strongly believed an education of the senses was extremely necessary in order to understand the relationship between perceptions and needs. For Bergson, “the aim of this education [was]... to harmonize [our]... senses...to restore between their data a continuity which ha[d]... been broken by the discontinuity of the needs of [the]... body.” (MM 49) Bergson had hoped to restore *plastic* continuity of pure perception and personal habits of experience lost in the conscious intervals of choice actions. Bergson’s study of affects aimed to dissolve limits between subjects and objects. He wanted to return life to an immanent state “constituting pure perception, whereby we place ourselves in the very heart of things.” (MM 67) For Bergson, “we should pass thereby from perception to matter, from subject to object”—in an endless state of continuous affection—autonomic and habitual, bound in continuum. (MM 70)

Both Bergson and Kiesler studied affection to derive a *virtual* state of instinct and habit by diffusing the limits of the body’s surface. “Between images and ideas” Bergson explained are a “series of intermediate states...the *affective* states.” (MM 53) Affections rise out of images he argued “and that is why [the body’s]... surface, the common limit of the external and the internal

¹⁶⁶ Henri Bergson, *Matière et Mémoire* (Paris: Presses Universitaires de France, 1908). English translation: *Matter and Memory* (New York: Zone Books, 1988) 38 (hereafter cited in text as MM)

¹⁶⁷ (MM 65): “Between images and ideas” Bergson explained are a “series of intermediate states...the *affective* states.” Affections rise out of images he argued “and that is why [the body’s]... surface, the common limit of the external and the internal is the only portion of space which is both perceived and felt.”

is the only portion of space which is both perceived and felt.” (MM 55) Bergson’s philosophy attempted to dispel the surface boundary of the body in order to pass from perception to matter—fusing life with the multitudinous vibrations of the universe. Kiesler’s Vision Machine instead served as a speculative experiment into complex relationships between “vision and fact”; it served to study the development of virtual imagery and its influence on human behavior pointing to what Paul Virilio would later describe as a “new *industrialization of vision*.”¹⁶⁸ The Vision Machine aimed to harness the central nervous system and externalize the imagination and creative cycle in order to instrumentalize it for *design*.

Among obvious reasons, the Vision Machine was never built. In the words of Fuller, the laboratory “assumed far too pretentious a plant and budget,” “their approach to design...[was] self-deceptive,” and “they start[ed] with scientifically outmoded limitations.” Fuller berated Kiesler’s “esthetically emotional exclamations of ‘apperception’” to be completely “fatuous”.¹⁶⁹ “In short,” Fuller argued as others would agree, the laboratory “looks like an innocuous and unconscious racket.” Eugene Raskin of *Pencil Points* publicly denounced Kiesler’s theories of Correalism and Biotechnique to be mere “Cerebrationism & Vacuotechnique”.¹⁷⁰ Kiesler faced significant opposition to his research agenda, and in 1941, the Design-Correlation laboratory closed arguably due to a shift in Columbia’s curricular priorities during the Second World War.¹⁷¹

Kiesler hoped Dean Arnaud would reinstate his laboratory but besides the study of the Mobile-Home-Library the program appeared to most unfocused. In addition to the Vision Machine there were several seemingly unrelated research projects ongoing in the Design-Correlation Laboratory. Kaufmann designed a flexible reading lamp that he planned to re-design to rise and lower for reading at a desk or lounge chair. (3LR 2, 8) Bartos started a sociological study of the present-day family as a continuation of the study of Viktor Olgyay of a house plan of 2500 B.C.

¹⁶⁸ Paul Virilio, *The Vision Machine* (Indianapolis: Indiana University Press, 1994) 59.

¹⁶⁹ Buckminster Fuller, Letter to Mr. F.J. Kiesler, Columbia University School of Architecture, from the Editorial Office of Fortune, Time & Life Building, Rockefeller Center, New York. April 14, 1939. As held in the Frederick Kiesler Letters, Microfilm, the Getty Research Institute, Los Angeles.

¹⁷⁰ Eugene Raskin, “Cerebrationism and Vacuotechnique: The Great Architect Evolves a New Theory,” *Pencil Points* (December 1939) 791-792.

¹⁷¹ Kiesler was asked to leave his office at 501 Avery by July 1, 1942 to make room for “other purposes” related to the “war program.” See letter Leopold Arnaud to Frederick Kiesler, June 9, 1942, Frederick Kiesler Papers, Box 4 of 7, Correspondence 1942-1943 Folder, Smithsonian American Archives of Art, Washington D.C.

(2LR 3) Florence Doe had prepared an outline for an investigation of primitive dwellings for emergency shelters, which by 1940 had evolved into a study of early housing in China.¹⁷² Paula Mann prepared a bibliography on color, and hoped to construct a model that demonstrated the interplay of color and light in the home. (3LR 8) Stark had designed an inexpensive linear-wall-library, and Carlo Adams drew a presentation drawing of Kaufmann's reading lamp fixture. (4LR 1.2) Kiesler's last two students had the ultimate challenge to design better tools for fastening—such as a new form of thumbtack or tape dispenser. (4 LR 1) Although all the projects in the laboratory related to industrial design and housing in some form or manner—they were not producing practical results. As the laboratory never attracted more than four students at any one time, and student work predominantly reflected Kiesler's incomprehensible personal research—the laboratory was not reopened at Columbia.

Research as Method

Despite its shortcomings however, Kiesler's research practice did demonstrate a formative educational model. He transgressed normative architectural and pedagogical practices to shift teaching emphasis away from purely formal and artistic design investigations studied through rote assignments. He hoped to engage original laboratory investigations where his students learned to apply research as a method to generate provocative, if controversial, architectural productions.

As architecture requires understanding complex fields of knowledge that do not always appear directly related to the pragmatics of formal construction, studies in morphology, organic structures, and behavioral systems provided inspiration in addition to practical knowledge necessary to invent innovative spatial forms. Form does not exist abstract or independent of social, environmental, political factors, or other seemingly non-architectural parameters. Form is consequential and not *a priori*—it evolves, shifts, and adapts due to changes and influences both internal and external. Kiesler's innovative multidisciplinary approach to research as a method attempted to incorporate broad historical and theoretical studies to inspire visionary productions.

¹⁷² (3LR 8). See also (4LR 2).

In spite of his nonlinear, esoteric, and popular scientific approach to design research, Kiesler's innovative teaching methods ultimately proved vital. In addition to later informing his own building practice, and the future practice of his student Armand Bartos, Kiesler's work had an effect on major architecture educational institutions across America. Dean Bennett at the University of Michigan was convinced Kiesler's model of education held promise and consulted with Kiesler to establish similar scientific scale to design problems at Michigan.¹⁷³ Cooper Union equally considered opening a Laboratory of Design Correlation in the 1940s, which included a course on pictorial charting and visual communication.¹⁷⁴ Walter Gropius also promoted scientific study of vision and perception similar to Kiesler at Harvard University.¹⁷⁵ In addition, Moholy-Nagy invited Kiesler to lecture on Design-Correlation in Chicago several times.¹⁷⁶ Moholy-Nagy was the first, Kiesler believed to soundly accept and develop research on Design-Correlation as

¹⁷³ See Letter from Dean Wells Bennett to Kiesler, March 8 1940.

¹⁷⁴ Two meetings by the finance committee were held in April 1942 to discuss a visual education course to be taught by Kiesler at Cooper Union. Kiesler had submitted a proposal and met with the advisory board in hopes to move the Design-Correlation Laboratory to Cooper Union. The committee adopted his proposal in light of Kiesler's emphasis on the problems of pictorial charting and visual communication necessary to translate large quantities of written material into pictorial presentation necessary to meet the demands of government work. See "Report on Two Meetings of the Finance Committee of the Advisory Board of Cooper Union," n.p., n.d., Frederick Kiesler Papers, Box 4 of 7, Correspondence 1942-1943 Folder, Smithsonian American Archives of Art, Washington D.C. See also Frederick Kiesler, "The Laboratory for Design-Correlation," March 21st, 1946 Laboratory for Design Correlation, REC 03 Box, Activities/Reports, Reports on the Laboratory for Design Correlation Folder, Kiesler Archives, Vienna.

¹⁷⁵ See Walter Gropius, "Is There a Science to Design?" *Magazine of Art* 40, Dec. 1947, reprinted in *Scope of Total Architecture* (New York: Harper & Brothers Publishers, 1954) 20-43.

¹⁷⁶ Moholy-Nagy organized for Kiesler to teach a series of lectures on "The Problem of Design-Correlation in Nature and in Technology" in Chicago, 1944. "Following our very agreeable conversation in NY I would like to ask you if there is any possibility of your coming to Chicago for from ten to fourteen days to give a concentrated course in design, comprising about six lectures" wrote Moholy-Nagy to Kiesler. "We will have Leger here with an exhibition of his painting and also some few lectures include James J Sweeny for six lectures." See letter from Moholy-Nagy to Frederick Kiesler, July 21, 1944, Briefe M, Mappe 3, as held in the Kiesler Archive. See also Moholy-Nagy to Frederick Kiesler, Aug. 21, 1944, Briefe M, Mappe 3, as held in the Kiesler Archive.

integral to architecture education.¹⁷⁷ But most directly, George Howe, the Chairman of Yale University School of Architecture invited Kiesler to teach at Yale in 1951 and 1952.¹⁷⁸

Kiesler first taught at Yale a multi-disciplinary fourth year studio. The studio included architects, painters, sculptors, drama students, and music students working in collaboration.¹⁷⁹ Kiesler proposed a planning assignment, but Howe preferred something easier; he consulted with his students and Josef Albers (head of the Art School) and Boyd Smith (head of the Drama Department) to write a program to design a small zoo in New Haven.¹⁸⁰ Albers, Kiesler, Noyes, and Switzer taught the studio together, however participants in the collaborative exercise were free to coordinate the program as they wanted with regard to site-selection, animal-selection, presentation, scale, color, form and medium.¹⁸¹ Kiesler was able to bring unique expertise to the problem from his studies in morphology at Columbia University—in addition to his research on article on “Design-Correlation: Animals & Architecture” for *Architectural Record*, 1937.¹⁸²

In his article “Animals & Architecture”, Kiesler had criticized the circular design of an Elephant cage by Tecton in London. [Fig. 3.61] The circular cages had been derived by simplistic

¹⁷⁷ See letter Frederick Kiesler to Dean Wells Bennett, November 13, 1949, Frederick Kiesler Papers, Box 4 of 7, Correspondence 1949 Folder, Smithsonian American Archives of Art, Washington D.C. See also letter from Kiesler to Professor Urey, October 17, 1949, Frederick Kiesler Papers, Box 4 of 7, Correspondence 1951-1952 Folder, Smithsonian American Archives of Art, Washington D.C.

¹⁷⁸ See a series of letters between Howe and Kiesler in 1951, Briefe H, Mappe 4, as held in the Kiesler Archive. See also letters between Howe and Kiesler from 1951 to 1952, Frederick Kiesler Papers, Box 4 of 7, Correspondence 1951-1952 Folder, Smithsonian American Archives of Art, Washington D.C.

¹⁷⁹ See letter George Howe to Frederick Kiesler, October 4, 1951, Briefe H, Mappe 4, as held in the Kiesler Archive.

¹⁸⁰ See letter to George Howe from Frederick Kiesler, Oct 4 1951 after meeting for lunch, Briefe H, Mappe 4, as held in the Kiesler Archive, Vienna. See also “Memorandum to: Mr. Albers from George Howe, cc. Mr. Sawyer, Mr. Noyes, Mr. Switzer, Mr. Kiesler, October 15, 1951, Briefe H, Mappe 4, as held in the Kiesler Archive. RE: The program Kiesler taught at Yale: “Advanced Design III, Problem 2, Collaborative Fall Term 1951, A Small Zoo.” Alongside the program, Howe sent Kiesler a fascinating outline of Jury procedures. At that time the Critic responsible for the course presented the program to the Jury who then proceeded to discuss the value and issues concerning the program among themselves with the students watching in the room. Critics then proceeded to present and defend each of the student projects to the Jury who were then provided time to discuss the work. Students only then defended their work after the faculty had discussed the project. Students were then asked to leave the room as the Jury graded their work. See “Architectural Jury Procedures, Yale University – Department of Architecture Memorandum to: All students and members of the Faculty,” Briefe H, Mappe 4, as held in the Kiesler Archive.

¹⁸¹ See “Memorandum to: Mr. Albers from George Howe.”

¹⁸² Frederick Kiesler, “Design Correlation: animals and architecture.” *Architectural Record*, v. 81, Apr. 1937, 87-92.

observation that Elephants held in captivity enjoy going around in circles. As Kiesler maintained architecture should be designed to facilitate bodily habits, not to prescribe them. An Elephant's habitat for example should be based on researched study of the animal's morphology and natural movements. Kiesler observed an Elephant has an "elastic" sole for its foot for example, and thereby the architect's task is to design a *plastic* ground surface "variable in its elasticity-coefficients and differentiations of textures."¹⁸³ [Fig. 3.62] From Kiesler's research, he appeared well-prepared to teach a zoo program, and as he explained to Howe, "without the research and design experiences at Columbia University, I could not have tackled so directly the intricate problems of analyzing and redesigning a zoological park with your students [; ...] while this is not a demonstration of basic research, it is a perfect sample of applied research, and I do hope you like it."¹⁸⁴ Based on the success of the Zoo studio, Howe invited Kiesler back in 1952 to teach a "Design Research Seminar" to the second-year students as the start of Yale's new Design-Correlation Laboratory.¹⁸⁵

With Howe's commitment to Kiesler's research agenda, Kiesler revived his laboratory with focus on biotechnical analysis. He proposed his students study the design and construction of a chair using similar biotechnical methods elaborated at Columbia for study of the Mobile-Home-Library. Kiesler's student Benjamin B. DuPont maintained a complete notebook on all the assignments in the seminar.¹⁸⁶ He included sketches of "Fixed & Variable" chair dimensions, and

¹⁸³ Ibid. 88.

¹⁸⁴ Letter Frederick Kiesler to George Howe, Dec. 15 1951, 4, Briefe H, Mappe 4, as held in the Kiesler Archive, Vienna.

¹⁸⁵ See letter George Howe to Frederick Kiesler, March 4, 1952, Frederick Kiesler Papers, Box 4 of 7, Correspondence 1951-1952 Folder, Smithsonian American Archives of Art, Washington D.C. Kiesler was paid \$3,000 for his winter course at Yale. In 1938 he had been paid \$3,000 annually at Julliard, and \$2,500 per year at Columbia. See letter George Howe to Frederick Kiesler, March 14, 1952, Frederick Kiesler Papers, Box 4 of 7, Correspondence 1951-1952 Folder, Smithsonian American Archives of Art, Washington D.C. See also letter from Oscar Wagner (Julliard School of Music) To Whom it May Concern, April 27, 1938 and letter from Philip Haydeu (Columbia University) To Whom it May Concern, May 7, 1938, Frederick Kiesler Papers, Box 4 of 7, Correspondence 1938-1939 Folder, Smithsonian American Archives of Art, Washington D.C.

¹⁸⁶ Benjamin B. DuPont was enrolled as a student in the Bachelor of Architecture program at Yale University during the 1952-1955 academic years. Both Kiesler and DuPont were at Yale at the same time, and Kiesler kept DuPont's notebook, which is held in the Kiesler Archive—although it is misfiled in the Columbia Design Correlation Laboratory Boxes. See "Notebook by Benjamin B. DuPont September 30 1952 Architecture 21 Mr. Kiesler," Laboratory for Design Correlation, REC 10 Box, Kiesler Archive, Vienna. According to Howe, Kiesler taught students in Intermediate

a chart of “Feelings observed from sitting in test rig” with the back “adjusted to best position.”¹⁸⁷ He made a study of feet and legs extended with knees up and feet crossed for best back comfort.¹⁸⁸ DuPont also included “A Progressive Contact Support Study” showing steps from minimum contact to a fully relaxed position that showed the body reclining with all fatigue points supported.¹⁸⁹ For his final project duPont proposed a chair design with an expandable soft cushion back; his chair however, was very rigid in appearance and lacked the flexibility and adaptability implied by the assignment.¹⁹⁰

As all Kiesler’s teaching proposals, the Yale research seminar was based on his own design research and interests. Kiesler had already constructed a remarkable chair in 1942 for the spaces of the Art of This Century Gallery that exhibited many ideas initiated in his laboratory at Columbia. [Fig. 3.63, Fig. 3.64] Kiesler’s chair was designed in shapes that could be repositioned for a variety of purposes. It could be lifted, and moved about the room as needed to interact with the body in multiple positions—standing or sitting. Its linoleum covered plywood surface modulated to the body—shaped to shifting motions. [Fig. 3.65] Kiesler’s pedagogical aim in his courses was not to teach students to think for themselves by designing and building their own creative ideas, but to learn how to think for themselves by participating in their professor’s research practice.

Kiesler’s teaching methodology, although perhaps similar to Charles and Ray Eames, George Nelson and many others to follow, was nevertheless surprisingly controversial even in the 1950s. Howe had hoped to establish a permanent position for Kiesler at Yale, however, after review by both the Dean and his Advisory Committee, it was determined Kiesler’s research philosophy and method were not appropriate to the educational goals of the school. Kiesler was not asked to return. The post-war climate required immediate practical training of young

Design I. Kiesler collaborated on this course with Eugene Nalle who also worked with two junior critics. See letter George Howe to Frederick Kiesler, March 14, 1952. Prior to my research it was not known that Kiesler had taught at Yale (or at any other institution other than Columbia), so I first contacted William R. Massa Jr. in the Manuscripts Archives at Yale University Library December 7, 2005 to verify this finding.

¹⁸⁷ “Notebook by Benjamin B. DuPont September 30 1952 Architecture 21 Mr. Kiesler.”

¹⁸⁸ Ibid.

¹⁸⁹ Ibid.

¹⁹⁰ Ibid.

architects to produce adequate housing, and not methodological explorations that encouraged independent thinking that might challenge modern housing prototypes of the faculty's design. "How much money is wasted to teach pseudo-modernism," Kiesler retorted to this ultimate rejection.¹⁹¹ At the time, there was no interest to teach architecture students to think critically for themselves. Independent thinking perhaps has never been the point of an architect's education, and probably never will be.

Kiesler proposed an architectural model of research similar to the laboratory sciences. He taught his students research as a method to learn how to produce their own original research through example. This form of education indoctrinates students to begin their careers in response to a particular school of thought. It becomes a problem when ideas and methods conflict with existing school structures or fail to teach students to think beyond the limits of the school's doctrine. Kiesler perhaps fell short in his own ambitions to educate students to think about the work that they were producing. If Deleuze, Foucault, and Virilio were at all correct, Kiesler's work marks a prescient moment in the history of design. His laboratory research engaged scientific study of dynamic bodily habits and affects, to support shifting powers of capitalist control. Regardless of one's own values or institutional bias, it is simply never enough to teach students to think for themselves; as educators it is our responsibility to inform students critically about what they are learning to think.

¹⁹¹ Frederick Kiesler to George Howe, June 21, 1952, Frederick Kiesler Papers, Box 4 of 7, Correspondence 1951-1952 Folder, Smithsonian American Archives of Art, Washington D.C.

4. Autonomic Vision: The Galleries

Form does not follow function.

Function follows vision.

Vision follows reality.

Frederick Kiesler

“Whatever the truth may be,” Kiesler proposed in his incomplete and unpublished book *Magic Architecture*, “with the erection of the first hut” there was a “Split in the Unity of Vision and Fact.”¹ Alongside completing his gallery exhibition designs in New York City and Paris in the 1940s, Kiesler wrote his book *Magic Architecture: the Story of Human Housing*, to discuss the aesthetic and psychological aspects of shelter design. From his studies of nests, caves, huts, and pyramids to skyscrapers, Kiesler observed that in building a world of artificial environments, humanity constructed shelters that distinguished humans from each other and their natural surroundings.² “Nature is Architecture,” he imagined until humanity became “individualized,” and began to link “cause and effect in time and space.” (MA 1; 8; 7, 9, 5) As humanity learned to discern differences in their world around them, Kiesler explained that people became more and more “detached” from their family or group, until they broke apart from any “natural adherence”. (MA 1; 9; 2) For Kiesler, “architecture must wait” for humanity to again become unified with their environment, if they are ever to bring their dreams together with the facts of reality. (MA 1; 9; 4)

¹ Frederick Kiesler, *Magic Architecture: The Story of Human Housing*, most complete version, unpublished, undated, Part 1, Chapter 9, pg. 1, 3 (hereafter cited in the text MA, text references are to part, chapter, page(s)). As held in the Austrian Frederick and Lillian Kiesler Private Foundation Archive, Vienna (hereafter referred as Kiesler Archive, Vienna). Similar to Kiesler, Gottfried Semper, Karl Bötticher, Karl Shinkel, Quatremère de Quincy, Viollet-le-Duc, Sir Banister Fletcher, Adolph Loos, and Le Corbusier to name only a few architectural writers all had similarly supposed a primitive hut or tomb to validate their ideology when writing their history of architecture. See Joseph Rykwert, *On Adam’s House in Paradise: The Idea of the Primitive Hut in Architectural History* (New York: Modern Museum of Art, 1972).

² Kiesler’s book *Magic Architecture: the Story of Human Housing* is far more incomplete than *On Correalism and Biotechnique*. See Appendix 2 for part and chapter headings of Kiesler’s unfinished book on *Magic Architecture*. Many of the chapters are short, and some chapters are entirely blank. Kiesler never completed the manuscript, although he did compile several illustrations. From my understanding there are no immediate plans to publish the book at this time.

In the past, Kiesler recalled, humanity lived predominantly autonomically without the ability for abstraction. Sensations, qualities, feelings and affects guided amorphous relations where “instinct, intuition, imagery and thought,” were “unified within the nucleus of experience,” that could not “be split and isolated.” (MA 1; 8; 4) An “energy of a common origin” bound intelligence and feeling, and “the play of that flow” created an ideal universe of “magnetic fields of great exuberance.” (MA 1; 9; 1) For Kiesler “everything [was...] ever-present”—nothing was completely dead—“time [was]... feeling space, and space the objectification of emotion.”³ Humanity ideally existed immanent to all matter without limits or boundaries. “There [was]... only one Reality,” Kiesler maintained, “and it [was]... the result of a constant interchange of the visible and the invisible, the dead and the alive. They inter-penetrate[d]. They depend[ed] upon each other. All objects, all configurations [were]... felt transparently,” he argued.⁴ Humanity purportedly had a pre-history where everything existed in continuity.⁵

To re-integrate society with the environment, Kiesler proposed to coordinate art and science into a unified building practice. He deduced that for primitives, the “Imagery of Art... heal[ed]... the breach in the Unity of man and nature,” and for contemporary society, a synthesis between art and science would again align humanity with their surroundings.⁶ Contemporary architecture he argued “must represent a conquest over technical difficulties,” in the “aim of unfolding the inherent power of imaginative living,” where there is “no longer a separation between the world of vision and fact.” (MA Intro.; 4) To “eliminate the barriers between art and technology,” Kiesler proposed to correlate “structure, equipment, furnishings, sculpture

³ (MA 1; 8; 5, 6); emphasis in original.

⁴ (MA 1; 8; 6); emphasis in original.

⁵ For Kiesler nature provided enclosure—“trees, rocks, mountains, rivers, the ocean and the sky [were]... all a part of man’s ‘shelter’, he argued, “they [were]... the archi-tectonics of the great structure of the seen and felt universe.” In an ideal past, nature’s all-nurturing atmosphere guided humanity in the space of pure feelings and emotions. “Soft and elastic,” they “yield[ed] to pressure” and “envelop[ed] one’s body continuously.” (MA 1; 8; 7, 8)

⁶ (MA 4; Intro.; 3) “It was in Art that primitive man found the link between the known and the unknown,” he argued. (MA 4; Intro.; 3). Through “myth and magic” “objects and qualities become efficacious by being fused with power” which “reaffirm[ed]... the vibrant dynamism of the world” and “fortifies the ego with the impression that there is magically potent brilliancy in the world.” (MA 4; Intro.; 2). “No longer a man of the herd” collective spirit is kept alive through visual symbols—a sort of “psycho-plastic expression” which binds him to the natural environment of animals, rocks and trees. (MA 4; 5; 1-2).

and painting” to create an “organic fusion between the physiological and psychological demands” of human existence.⁷ “The Hygiene of Functional Architecture,” where modern architects “cleaned building[s] inside and outside of ornamental growths...(Loos),” or where the “human house was nothing but a machine (Corbusier),” for Kiesler did not reconstitute unity.⁸ As an outgrowth of his research on Design-Correlation, Kiesler proposed instead to combine “Science that resurrected fact” with “Surrealism that resurrected vision” to design continuous worlds of immanent feelings. (MA 10; 8; 1 and 10; 9; 1)

Kiesler believed a synthesis between art, architecture, and the environment would reconstitute unity. As art he recognized had a motivating effect on viewers, Kiesler proposed to rethink the relationship between art and its surroundings. Kiesler looked to what he believed were primitive cultures not merely with nostalgia for the unity he imagined existed in the past, but to study how best to form interrelationships between humanity and the built and natural world. Similar to the primitive cultures he studied, Kiesler aimed to utilize art in its relationship to architecture to restructure space and recreate environments that would invoke human beings to engage more immanently, intuitively, and intensely with their surroundings. Kiesler hoped to heal the split between what he called dreams and reality, vision and fact, by adapting his research on human habits and perceptions to invoke the perceiving body into a state pure automatism within a totalizing atmosphere of mediated effects. Art he observed elicited viewer perceptions that could affect human actions. He chose to instrumentalize art to create interactive and immersive spatial environments. Kiesler posed to use art to elicit sensations, qualities, feelings, and affects to invoke instinct, intuition, imagery, and thought. In this manner, he hoped to induce the body and immerse the viewer into an instinctive state within their surroundings. Kiesler’s automatist research interests appealed to the Surrealist group, and he was commissioned to design several gallery exhibitions in the 1940s where he attempted to create continuity between art, the viewer, and the architectural setting. Kiesler’s engagement with the Surrealists during the 1940s had an

⁷ Kiesler, “On Correalism and Biotechnology,” 1938, most complete unpublished manuscript, 49.

⁸ (MA 10; 8; 1); emphasis in original.

enormous impact on his design opportunities, as he elaborated his research on *Magic Architecture* and his subsequent investigations into shelter design.

The Galleries

“An end must be brought to the divorce between architecture and painting,” exclaimed the incinerating writer for *View* magazine Nicolas Calas and Kiesler, in their 1947 Blood Flames Surrealist exhibition catalogue.⁹ Attacking Le Corbusier’s “pure architecture” of austere white walls, which “ostracize” painting and Frank Lloyd Wright’s substitution of pictures for views out to natural landscapes, Calas and Kiesler proposed a new integration between art and architecture for their exhibition designs. (BF 16) We must challenge the typical gallery, they argued, with its “tame groves of polished objects” and “trimmed plants,” that “look of any other expensive object produced for conspicuous consumption.” (BF 16) Instead, they proposed “organizing the field of vision” with interrelationships broad enough “to include in one continuum the feeling of painting, sculpture, walls, ceiling, floor and spectators.” (BF 16) Unimpressed with Le Corbusier’s long-time effort, as Kiesler reminds us, to introduce “painting into the... white bleakness of functional design by tinting walls with paint hues of colors and hanging paintings by Fernand Léger”—Kiesler presented an alternate approach to functional design at his Blood Flames Surrealist show. (BF 16) [Fig. 4.1]

The Blood Flames exhibition opened at the Hugo Gallery on East 55th Street in New York City on March 3, 1947. The exhibit featured paintings by Roberto Matta, Achile Gorky, Wilfredo Lam, and Gerald Kamrowski; sculptures by Isamu Naguchi, Helen Phillips, and David Hare; and mosaics by Jean Raynal. Calas, the curator for the show was the instigator behind the exhibition.¹⁰ He chose the sculptures, paintings, and mosaics while Kiesler designed and painted the architectural layout for the space. Kiesler spent only two and a half days painting and

⁹ Nicolas Calas and Frederick Kiesler, *Bloodflames 1947*, [Exhibition cat.] (New York: Hugo Gallery, 1941), 16, as held in the Kiesler Archive, Vienna (hereafter cited in text BF).

¹⁰ See Henry McBride, “Modernism Rampant: the New Sculptors and the New Painters Exalt the New Freedoms,” *The New York Sun, Art[section]*, Friday, March 7, 1947. p. 29, Blood Flames Box, Blood Flames Clippings Folder, from the Hugo Gallery Exhibition scrapbook, Kiesler Archive, Vienna.

installing the actual exhibit.¹¹ Yet, despite the speed with which Kiesler finessed the event, the Blood Flames Surrealist exhibition marked a moment of clarity within the scope of Kiesler's larger life-long project—his endless project. The Blood Flames Gallery realized Kiesler's vision to correlate a seamless organization of disconnected parts into one continuous elastic space.

Surrealist Relationship

Prior to designing his Surrealist gallery exhibitions, Kiesler had limited involvement with the Surrealist group. He was close friends with members Jean Arp and Tristan Tzara in Europe during the 1920s, but when Kiesler moved to New York, those relationships became distant. Save a series of brief reunion meetings while the Kiesler's traveled to Paris in the fall of 1930, Kiesler's relationships to Surrealist members was not decisive until he began associating with Duchamp in the late 1930s.

Kiesler had been generally acquainted with Duchamp prior to the 1940s; however, their relationship could hardly be construed as close.¹² Steffi worked for Katherine Dreier at the Anderson Gallery managing an exhibition of modern art in 1927, and during that time Kiesler volunteered to design a museum of modern art for Dreier and the Société Anonyme that was never completed. It has been inferred that Kiesler and Duchamp worked together during the planning stages of this museum design, and it is known that Duchamp and Kiesler did attend the same dinner party once in 1933, and again in 1936.¹³ However, it was not until the success of

¹¹ Kiesler started working on the exhibition design at the Hugo gallery in 1946, and although he had great creative freedom—there was little budget. The show did not garner much intrigue from the gallery owner Alexander Jolas; it was not a priority, and thereby was given very little conceptual guidance. To be successful with this exhibition Kiesler had to focus his effort to only a few carefully considered moves. Most of the work was envisioned ahead of time in conceptual gouache drawings, which Kiesler had shown to Calas, in August, 1946. See letter from Frederick Kiesler to Alexander Jolas, April 15th 1947, Briefe M, Mappe 3, Kiesler Archive, Vienna. See also Steffi Kiesler Diary, Kiesler Archive, Vienna.

¹² Kiesler and Duchamp purportedly first met at the 1925 *Exposition Internationale des Arts Décoratifs et Industriels Modernes*. See Jennifer Gough-Cooper and Jaques Caumont, "Frederick Kiesler and the Bride Stripped Bare," in *Frederick Kiesler 1890-1965*, ed. Yehuda Safran (London: Architectural Association, 1989).

¹³ See Steffi Kiesler Diary, Kiesler Archive, Vienna. See also Mark Linder, "Wild Kingdom" in *Autonomy and Ideology: Positioning an Avant-Garde in America*, ed. R.E. Somol (New York:

Kiesler's article on Duchamp's Big Glass, published in *Architectural Record* in 1937, that Duchamp took much notice of Kiesler.¹⁴ [Fig. 4.2]

Kiesler's contact with Duchamp was predominantly through Dreier. Kiesler had visited Dreier's house to make photographs of Duchamp's glass painting on January 28, 1937.¹⁵ Kiesler had also contacted Man Ray who had worked with Dreier alongside Duchamp at the Société Anonyme to talk over matters regarding a portrait of Duchamp Kiesler had seen in Man Ray's hotel room while at the Barbizon Plaza in New York, February 8, 1937.¹⁶ Kiesler hoped to use these images of Duchamp's paintings and sculptures for his upcoming "Design-Correlation" article. Upon successful publication of the article, Dreier invited Kiesler and Steffi to her home in West Redding Connecticut July 1937 in hope to discuss Duchamp's response.¹⁷ Dreier received a letter from Duchamp who had seen "the wonderful article (*Architectural Record*) on the Glass."¹⁸ Dreier was extremely excited for Kiesler, as she had "never heard him [Duchamp] use such praise."¹⁹

Kiesler's interpretation of the "Big Glass" was unexpected. It did not focus on the meaning of symbols presented in Duchamp's painted sculpture but creatively on the technique of its manufacture and subsequent fracture. In contradistinction to glass as a transparent surface that physically separated and visually linked space, Duchamp's "painting" of an "opaque picture" suspended in mid-air negated as Kiesler argued, "the actual transparency of the glass."²⁰ The

Monacelli Press, 1997). Linder makes consistent reference to Duchamp and Kiesler's work together on a "telemuseum" project without supporting evidence that there was a collaboration.

¹⁴ Frederick Kiesler, "Design-Correlation: from brush-painted glass pictures of the Middle Ages to [the] 1920's." *Architectural Record*, v. 81 (May 1937): 53-59.

¹⁵ See Steffi Kiesler Diary, Kiesler Archive, Vienna.

¹⁶ See Letter Frederick Kiesler to Mr. Man Ray, February 8th 1937, Frederick Kiesler Papers, Box 4 of 7, Correspondence 1937 Folder, Smithsonian American Archives of Art, Washington D.C.

¹⁷ See Letter Katherine S. Dreier to Frederick Kiesler, July 9th 1937, Frederick Kiesler Papers, Box 4 of 7, Correspondence 1937 Folder, Smithsonian American Archives of Art, Washington D.C.

¹⁸ *Ibid.*

¹⁹ *Ibid.*

²⁰ Kiesler, "Design-Correlation: from brush-painted glass pictures of the Middle Ages to [the] 1920's," 55. See also Frederick Kiesler, "Design-Correlation, Marcel Duchamp's "Big Glass," *Frederick J. Kiesler: Selected Writing*, ed. Siegfried Gohr and Gunda Luyken (Stuttgart: Verlag Gerd Hatje, Ostfildern, 1996), 40.

painting “floated in a state of eternal readiness for action, motion and radiation.”²¹ The image suspended in “tension,” produced what Kiesler had been striving for in much of his own work since his relationship with members of *de Stijl* in the 1920s. As Kiesler wrote,

nature distinguishes between framework and tensional fillings, both elastic and interdependent, while we build rigidly, inflexibly, lifelessly. The manner of joining parts of similar or of different densities in this interdependence is tantamount to nature and to artifice. Contour design is nothing else but joint. A contour is the illusion of a spatial joint of forms. Joints are dangerous links; they tend to dis-joint (everything in nature is joined and a group of joints is form). Hence, all design and construction in the arts and architecture are specific calculations for rejoining into unity, artificially assembled material, and the *control* of its decay.²²

For Kiesler, joints are dangerous because they are susceptible to “dis-joint”. As all architecture is effectively constructed through assembly, he argued, “building design must, therefore, aim at the reduction of joints.”²³ Kiesler believed Duchamp’s work supported a new and organic “contouring”—that built more closely to nature—“with the aim of continuity”.²⁴ Duchamp’s joints held the composition together despite the fracturing of the glass plane. Kiesler argued Duchamp’s work suggested new ways to manufacture more similarly to nature’s way of building by “cell division”.²⁵ [Fig. 4.3] Duchamp’s method of “precise form articulation” created “ligaments of steel-or-what-not” that “divide[d] all shapes and at the same time link[ed] them!”²⁶ Duchamp’s technique Kiesler compared to the structure of an “x-ray-graph” of a leaf where “the veins...are merely the extensions into the leaf of the chief elements of the stem,” which “help to create *turgor*”.²⁷ [Fig. 4.4, Fig. 4.5] The veins on each leaf grow to support the skin—networked together in cellular tension. Similar to studies by Goethe and Francé on plant morphology, Kiesler

²¹ Ibid.

²² Ibid. 57-58; my italic.

²³ Kiesler, “On Correalism and Biotechnique: a definition and the new approach to building design,” 67.

²⁴ Ibid. See also Kiesler, “Design-Correlation: from brush-painted glass pictures of the Middle Ages to [the] 1920’s,” 58. See also Kiesler, “Design-Correlation, Marcel Duchamp’s “Big Glass,” *Frederick J. Kiesler: Selected Writing*, 40.

²⁵ Kiesler, “On Correalism and Biotechnique: a definition and the new approach to building design,” 67.

²⁶ Kiesler, “Design-Correlation: from brush-painted glass pictures of the Middle Ages to [the] 1920’s,” 58. See also Kiesler, “Design-Correlation, Marcel Duchamp’s “Big Glass,” *Frederick J. Kiesler: Selected Writing*, 40.

²⁷ Kiesler, “Design-Correlation: from brush-painted glass pictures of the Middle Ages to [the] 1920’s,” 57. See also Kiesler, “Design-Correlation, Marcel Duchamp’s “Big Glass,” *Frederick J. Kiesler: Selected Writing*, 41.

looked to the relationship between art and science in nature to discover new ways to construct continuous forms that might control inevitable fracture.

Surrealist Gatherings

On a visit to New York in February 1938, Duchamp and Kiesler met together for dinner, and with Duchamp's support, Kiesler gained access to the intimate Surrealist circle surrounding André Breton.²⁸ With the emigration of Surrealist members to New York during the Second World War, Kiesler reaped the full-benefits of his association with the group. Kiesler became the only architect recognized as an official Surrealist member, and his penthouse apartment quickly became a central hub for collaborative Surrealist meetings, intimate dinners, and late-night gatherings.

Matta was one of the first Surrealists to meet Kiesler in New York. Matta visited Kiesler's apartment on June 9, 1940.²⁹ Kiesler and Matta most likely met through their mutual friend, the English painter Gordon Onslow Ford, who had been a frequent visitor to the Kiesler's penthouse in Manhattan with his wife Marianne. Onslow Ford, Matta, and Kiesler met often together, and when Richter came to New York, he started meeting weekly with the group after May 1941. Nicolas Calas began stopping by at that time, and Breton notably visited the Kiesler's with Onslow Ford on August 4, 1941. When Duchamp returned to New York in 1942 from Marseille, the Kieslers attended his welcoming party at Breton's apartment. Duchamp soon moved into the Kieslers' home in October of the same year. Although Duchamp was not there often, he stayed with Kiesler until October 14, 1943 while they worked intensively together alongside Breton, Matta, and Richter on ideas, exhibitions, and several essays and projects throughout the 1940s.

Murals without Walls

Gorky and Noguchi, who the Surrealists especially influenced during their stay in New York, often joined Kiesler and his friends for dinner on several occasions during that exciting time.

²⁸ See Steffi Kiesler Diary, Kiesler Archive, Vienna.

²⁹ Ibid.

Gorky and Noguchi had already been visiting the Kieslers' home for several years. Gorky and Noguchi had been dinner companions of the Kieslers certainly since 1933 and 1931 respectively, and Noguchi likely met Kiesler through their mutual association with Fuller and Eugene Schoen.³⁰

In defense of his friend, Kiesler wrote an article praising Gorky's mural for the Newark Airport in 1938.³¹ Kiesler supported the manner Gorky painted the mural on a canvas that floated free of existing walls. Kiesler argued that an artist must design a mural in "heterogeneous unity" with surrounding architecture.³² As an easel painter "has control of the unity" of his work—and even chooses or designs the frame—for Kiesler the mural painter must instead consider the building his frame.³³ The mural painter must design and situate their wall painting in response to their environment. Similar to what Gottfried Semper, described as the principle of wall dressing (*Bekleidung*), Gorky suspended his mural to form a new architectural space that covered the presence of the existing wall.³⁴ For Semper wall coverings reveal forms of meaning, and Gorky painted his mural intentionally Kiesler argued, to appear two-dimensional, "outflattened" as if the room-enclosure.³⁵ [Fig. 4.6] Its two-dimensional surface focused viewer attention on the quality

³⁰ Ibid.

³¹ Frederick Kiesler, "Murals without Walls: Relating to Gorky's Newark Project." *Art Front*, II, December 1936, 10-11.

³² Ibid. 10.

³³ Ibid.

³⁴ Semper (1803-1879) developed a theory of tectonics during the same time as Karl Botticher (1806-1889), inspired perhaps from Botticher's understanding of the *Kunstform* and the *Kernform* (*Werkform*). Semper elaborated the *Kunstform* as *Bekleidung*, the principle of dressing. The *Kunstform* became a mask, a wall dressing, that Harry Francis Mallgrave in his introduction to *Gottfried Semper: The Four Elements of Architecture and Other Writings* suggests was intended to "camouflage...the wall's material presence." As a carpet or tapestry is hung over a wall, it becomes the surface—supported by the wall—concealing the wall as clothing. See Harry Francis Mallgrave, "Introduction," in *Gottfried Semper: The Four Elements of Architecture and Other Writings*, tr. Harry Francis Mallgrave (New York: Cambridge University Press, 1989) 39. See also Gottfried Semper, "The Four Elements of Architecture: A Contribution to the Comparative Study of Architecture (1851)" as in *Gottfried Semper: The Four Elements of Architecture and Other Writings*, tr. Harry Francis Mallgrave (New York: Cambridge University Press, 1989), 102-106. See also Gottfried Semper, "Style in the Technical and Tectonic Arts or Practical Aesthetics: A Handbook for Technicians, Artists, and Patrons of Art (1860)," as in *Gottfried Semper: The Four Elements of Architecture and Other Writings*, tr. Harry Francis Mallgrave (New York: Cambridge University Press, 1989), 190, 254. See also Gottfried Semper, "Prospectus Style in the Technical and Tectonic Arts or Practical Aesthetics (1859)," as in *Gottfried Semper: The Four Elements of Architecture and Other Writings*, Tr. Harry Francis Mallgrave (New York: Cambridge University Press, 1989), 177.

³⁵ Kiesler, "Murals without Walls: Relating to Gorky's Newark Project." *Art Front*, II, December 1936, 10.

of paint while at the same time formed the illusion of an expansive three-dimensional atmosphere. The painting used abstract images of airplanes overlapping and gesturing in flight to create illusory space. The mural—not the wall—provided the qualitative spatial enclosure that now defined the surrounding atmosphere.

Kiesler's article "Murals without Walls" spoke to a very important aspect of Kiesler's research project. Similar to Constructivist Theater designs by Vesnin and Meyerhold, Kiesler had hoped to eliminate the wall as a spatially defining element not only in stage or exhibition designs, but also in architecture. Buildings should have "NO MORE WALLS," Kiesler had argued, and similar to Semper, Kiesler favored temporal solutions that formed elastic spatial expressions.³⁶ Gorky's floating mural created space in *heterogeneous unity* with the surrounding environment by using the functional flexibility of paintings as wall coverings. Kiesler applied a similar strategy to use artworks to form spatial environments in all his 1940s exhibition designs.

Art of This Century

With respect and understanding from within the Surrealist circle, Kiesler received an invitation from Peggy Guggenheim to design the four new gallery exhibits for the Art of This Century Gallery in New York, 1942.³⁷ Kiesler designed the galleries to display an array of European artwork smuggled from France during its occupation by Germany in the Second World War. The gallery featured a cubist exhibit, a temporary exhibit, and a surrealist exhibit, alongside an interactive show of works by Klee and Duchamp. Kiesler found inspiration for his exhibition from previous Surrealist gallery designs. Most particularly he was informed by Duchamp's "First Papers of Surrealism" exhibition that opened one week earlier on 51st and Madison in New York for the benefit of French prisoner's of war that featured miles of string threaded through various

³⁶ Kiesler, "Ausstellungssystem Leger und Trager," *De Stijl* Serie XII nos. 10 & 11 (6 Jaar 1924-1925): 146. Translated by Frederick and Steffi Kiesler in varying versions from 1925-1930, as held in the Kiesler Archive, Vienna; emphasis in original. See also Kiesler, "Manifesto of Tensionism," in *Contemporary Art Applied to the Store and its Display*, 49.

³⁷ For more on the Art of This Century Gallery see Milton Gendel, Eva Kraus, and Valentina Sonzogni, *Art Of This Century*, ed. Dieter Bogner and Udo Kittelmann (Munich: Hatje Cantz, 2003); see also Francis O'Connor, Don Quaintance, Jasper Sharp, Valentina Sonzogni, Susan Davidson, Philip Rylands, *Peggy Guggenheim & Frederick Kiesler: The Story Of Art Of This Century*, ed. Dieter Bogner (Venice: Guggenheim Museum, 2005).

dolls, idols, ceremonial masks and work by Magritte, Chagall, and Guggenheim's husband Max Ernst.³⁸ [Fig. 4.7] In Duchamp's exhibition, he arguably created continuous interrelationships through the introduction of a *framework* of string that synthesized space in *heterogeneous unity* like a wall covering.³⁹

Kiesler's Surrealist gallery received perhaps the most attention of his four Art of This Century exhibition spaces. [Fig. 4.8] It took advantage of newly developing plywood materials used in furniture and the aerospace industry to achieve a continuous topological surface.⁴⁰ The Surrealist gallery featured a dark tunnel with two curved plywood walls set apart with paintings suspended on wooden armatures with flexible metal joints. Kiesler presented a series of images in asymmetrical rhythm that appeared to float in space before the curved spatial background. He used a layout similar to Herbert Bayer's 1930 "diagram of the field of vision" that biotechnologically studied the limits of perception.⁴¹ [Fig. 4.9] Kiesler created a spatial

³⁸ Comparison between these two exhibitions was made by journalists at the time; see "Interiors of Chaos," *Time*, November 2, 1942, 47, Frederick Kiesler Papers, microfilm reel 127, Smithsonian American Archives of Art, Washington D.C. For a recent analysis of the exhibition see Lewis Kachur, *Displaying the Marvelous: Marcel Duchamp, Salvador Dali, and Surrealist Exhibition* (Cambridge: MIT Press, 2001).

³⁹ See Cynthia Goodman, "Frederick Kiesler: Designs for Peggy Guggenheims Art of This Century Gallery," *Arts Magazine* 51, June 1977. See also Cynthia Goodman, "The Art of Revolutionary Display Techniques," in *Frederick Kiesler*, ed. Lisa Phillips (New York: Whitney Museum of American Art, 1989) 57-83. For an alternate interpretation see also T. J. Demos, "First Papers of Surrealism, 1942," *October*, Vol 97 (Summer, 2001) 91-119, reprinted and revised in T.J. Demos, *The Exiles of Marcel Duchamp* (Cambridge: MIT Press, 2007) 190-242. With his interest to create a very favorable of critique of Duchamp, Demos I believe forms too clear of a distinction between Kiesler's and Duchamp's galleries.

⁴⁰ Kiesler owned an original copy of the 1940 "Organic Design in Home Furnishings," exhibition catalog which featured the Eames plywood furnishings. During the war, material shortages challenged Kiesler to make use of inventive materials for his gallery design. See Lillian Kiesler, "Personal Library of Frederick Kiesler," 112-126. Original library of books held at the Kiesler Archives, Vienna.

⁴¹ Along with Alexander Dörner, Bayer designed the "Bauhaus 1919-1928" exhibit in 1938 at the Museum of Modern Art in New York. He suspended paintings from the wall and ceiling, and painted the path along the floor. See Arthur A. Cohen, *Herbert Bayer: The Complete Work* (Cambridge: MIT Press, 1994), 292. See also Beatriz Colomina, "Enclosed by Images: The Eameses' Multimedia Architecture," *Grey Room*, ed. Branden Joseph, Felicity Scott and Antoine Picone, Vol. 1, #2 (Cambridge: MIT Press, 2001) 20. See also *Mary Anne Staniszewski, The Power of Display: A History of Exhibition Installations at the Museum of Modern Art* (Cambridge: MIT Press, 1998) 25-28. See also T.J. Demos, *The Exiles of Marcel Duchamp*, 277-278. See also Richard A. Etlin, *Art, Culture, and Media Under the Third Reich* (Chicago: University of Chicago Press, 2002) 297. See also Joan Ockman, "The Road Not Taken: Alexander Dörner's Way Beyond Art," in *Autonomy and Ideology: Positioning an Avant-Garde in America*, ed. R. E. Somel (New York: Monacelli, 1997) 112.

atmosphere that promoted visual linkages between images by eliminating frames from all paintings to facilitate the flow between ideas.

Shadow Boxes

Interested in how images interact with the viewer in space, Kiesler constructed several shadow box devices based on his studies of the Vision Machine from his Design-Correlation research. The shadow boxes isolated art through openings in a wall or screen to force the spectator to “focus completely and unnaturally on the object itself.”⁴² Similar to Duchamp’s rotating disks, *Anemic Cinema*, and precision optic devices, Kiesler’s shadow boxes focused conscious perception on a series of successive images—set to motion—to create a sense of illusionary space. One optical machine in the Kinetic Gallery used a rotary device like a magic lantern to animate a series of Duchamp’s partially opened *Boite-en-vailise* (1935-41) images.⁴³ [Fig. 4.10, Fig. 4.11] Another shadow box device set up between the Abstract and Daylight Galleries used an ocular diaphragm surrounded by a series of fisheye mirrors. [Fig. 4.12] Opening the lens one saw Klee’s *Magic Garden*, superimposed against the mirror image of the spectator and the Abstract Gallery behind. [Fig. 4.13] Closing the diaphragm, one looked up to see Kurt Schwitters *Relief* suspended within a glass picture frame that revealed part of the Daylight Gallery beyond. Moving through the door into the distant room—the image space expanded to complete the picture of the Daylight Gallery held in the mind’s eye. [Fig. 4.14] Then looking back towards the shadow box, the viewer visualized the Abstract Gallery contracted within the glass frame. This last framed image superimposed against a series of after-images in memory originally seen within the shadow box device. Perception fluctuated between these

⁴² Maria Bottero, “Kiesler and the American Avant-garde,” in *Frederick Kiesler: Arte Architettura Ambiente* (Milano: L Electra, 1996) 213.

⁴³ For more details on Kiesler’s Shadow Box devices in the Art of This Century Gallery see Milton Gendel, Eva Kraus, and Valentina Sonzogni, *Art Of This Century*, ed. Dieter Bogner and Udo Kittelmann (Munich: Hatje Cantz, 2003); see also Francis O’Connor, Don Quaintance, Jasper Sharp, Valentina Sonzogni, Susan Davidson, Philip Rylands, *Peggy Guggenheim & Frederick Kiesler: The Story Of Art Of This Century*, ed. Dieter Bogner (Venice: Guggenheim Museum, 2005)

successive images unfolding through time—creating the sense of an elastic spatial continuum between the rooms.⁴⁴

The Vision Machine and the subsequent shadow box devices were designed, Kiesler wrote, as “instrument[s] to facilitate the co-reality of fact and vision.”⁴⁵ They “specifically...demonstrate[d] the transformation of images into eidetic visions,” he claimed, in that they stimulated a zone of optical perception between *objective* bodily sensations and *subjective* pictorial images.⁴⁶ Within this *zone of indeterminacy*, neither subjective nor objective, eidetic images constitute a virtual depository of endless images in the process of becoming.⁴⁷ They stream forth in memory between two poles of the imagination, ideas and after-images. Surrounded by a world of virtual images—Kiesler’s vision machines simulated automatically not only conscious perception by taking snapshots of passing reality, but the imagination as it correlated together images to create new ideas—forms.

Kiesler’s shadow box devices functioned similarly to his Saks Fifth Avenue show window displays. In both devices perception worked similarly to a series of photographs seamed together in continuous articulation that have fragmented and immobilized time into fixed moments of consciousness, while our memory solidifies into sensible qualities the continuous flow of things.⁴⁸ The first shadow box device created a spatial continuum limited to the imagination, while the second device actually began to activate the body-in-motion to move about between a series of continuous spaces.

Richter’s *Stalingrad* scroll featured in the Daylight room of the Art of This Century Gallery, demonstrated the effects of these optical techniques. [Fig. 4.15] In Richter’s scroll, images situated in dynamic patterns produced tension *unconsciously* in the continuous movement of the

⁴⁴ Kiesler summarizes the viewer’s experience of his shadow box devices in “Design Correlation as an approach to architectural planning,” *VVV Almanac*, ed. David Hare, New York, n. 2-3, (Mar. 1943) 78-79.

⁴⁵ *Ibid.* 79.

⁴⁶ *Ibid.* See also E.R. Jaensch, *Eidetic Imagery*, Part I, pp. 1, 2, 13, 15, 16. As held in the Vision Machine Box, VM_Research excerpts Folder, Kiesler Archive, Vienna.

⁴⁷ For more on the study of a *zone of indeterminacy* see Henri Bergson, *Matière et Mémoire* (Paris: Presses Universitaires de France, 1908). English translation: *Matter and Memory* (New York: Zone Books, 1988) 32, 36 (hereafter cited in text as MM).

⁴⁸ (see chap. 2, n. 42.)

eye with the “accumulated energy” released as Richter described “into actual movement.”⁴⁹ “Sensation lay in the stimulus which the remembering eye received by carrying its attention from one detail, phase or sequence, to another that could be continued indefinitely.”⁵⁰ As Richter explained, “in this way, the eye [was]... stimulated to an especially active participation, through the *necessity of memorizing*.”⁵¹ As the eye was directed between a series of images and their after-images in memory, haptic stimulation is impressed upon the viewer—and then released through movement of the body-in-motion.

Surreal Impressions

Surrounded in a room of distracting images, Kiesler employed these visual and spatial tactics in all his 1940s exhibition designs to stimulate the imagination and affect the unconscious mind and body to wander. [Fig. 4.16] The Abstract Gallery featured a series of images suspended off the wall—wrapped within an enclosure of a sinuously curved spatial backdrop.⁵² [Fig. 4.17] “Geometrically severe” art was often displayed in Kiesler’s post impressionist exhibition designs with a “distracting jumble of effects,” remarked MoMA director Edgar Kaufmann Jr. in his review of the exhibition.⁵³ With the eye set to distracting images of wonder, the body moved habitually—autonomically—about the galleries. The “viewer...[was] led around the room by the eye, and shown objects singly, but in no special sequence,” Kaufmann explained.⁵⁴ [Fig. 4.18] Passing into the Surrealist gallery space between two curved plywood shells over and under a looming plywood ceiling and sinuous linoleum floor—pulsating lights moved in rhythmic distracting succession to focus concentrated attention upon the individual images while a roaring sound of an approaching train was heard in the background. “It’s dynamic,

⁴⁹ Hans Richter, “Easel-Scroll-Film,” 81.

⁵⁰ *Ibid.*

⁵¹ *Ibid.*

⁵² See Edgar Kaufmann, “The Violent Art of Hanging Pictures,” *Magazine of Art*, March 1946, 108, Blood Flames Box, Blood Flames Clippings Folder, from the Hugo Gallery Exhibition scrapbook, Kiesler Archive, Vienna.

⁵³ *Ibid.* 109.

⁵⁴ *Ibid.*

it pulsates like your blood,” Kiesler described.⁵⁵ The flickering movement imposed by “the lights going on and off automatically” in the Surrealist Gallery, Kaufman suggested created an equally complicated effect.⁵⁶ Too shocking the automatic feature had to be permanently switched off.

Kiesler’s Blood Flames exhibition at the Hugo Gallery streamlined these visual effects. The exhibition pulled the spectator immediately into a vortex of distracting images upon entering the room. [Fig. 4.19] “My eyes have never bulged farther from their sockets,” Abstract Expressionist painter and newspaper critic Ad Reinhardt exclaimed, as he attempted to “resist...being ushered into the anguished, amorphous world of some of the pictures.”⁵⁷ “Matta’s dental equipment, Kamrowski’s digestive tracts, and Lams sexual jungle,” he began to argue grabbed one’s focused attention. Matta’s pictures even “appear[ed] able to move about and to pinch you with metal fingers and crush you with metal arms,” described another critic.⁵⁸ Angled on the ground, twisted on the wall or hanging from above, the arrangement of works forced the eye and in turn the body to shift back and forth almost automatically. [Fig. 4.20]

Lured towards the central image of Lam’s *Eternal Presence*, the viewer entered a peep show chamber, as one critic abashedly remarked, to stand “bride-like under the white-veiled canopy as long as my neck could take the strain of staring at the ceiling.”⁵⁹ [Fig. 4.21] Induced to sit in one of Kiesler’s modular chairs to view the painting, the body cranked and twisted to one side while looking up at the image to arrive at any momentary semblance of comfort. [Fig. 4.22, Fig. 4.23] Shifting automatically back about the gallery spaces, individual images caught one’s focused conscious attention, while a path—delineated as a mobius strip—an endless strip—throughout the space invited the eye, and in turn the body, to unconsciously move about the room

⁵⁵ “Isms Rampant: Peggy Guggenheim’s Dream World Goes Abstract, Cubist, and Generally Non-Real,” *Newsweek*, 66, Blood Flames Box, Blood Flames Clippings Folder, from the Hugo Gallery Exhibition scrapbook, Kiesler Archive, Vienna.

⁵⁶ *Ibid.*

⁵⁷ Ad Reinhardt, “Neo-Surrealists Take over a Gallery,” *New York, PM.*, Tuesday, March 11, 1947, 10, Blood Flames Box, Blood Flames Clippings Folder, from the Hugo Gallery Exhibition scrapbook, Kiesler Archive, Vienna.

⁵⁸ Henry McBride, *The New York Sun*, Art[section], p. 29 Friday, March 7, 1947, Blood Flames Box, Blood Flames Clippings Folder, from the Hugo Gallery Exhibition scrapbook, Kiesler Archive, Vienna.

⁵⁹ “Pictures On Ceilings,” Art and Antiques [section], *New York World-Telegram*, Saturday, March 8, 1947, 6, Blood Flames Box, Blood Flames Clippings Folder, from the Hugo Gallery Exhibition scrapbook, Kiesler Archive, Vienna.

within a labyrinthine maze. [Fig. 4.24] Moving from image to image—from moment to moment—time merged into an expansive space. Similar to Kiesler's Saks Fifth Avenue show window designs, he created environments of contraction through image and of expansion through undulating surface. Individual works of art seamed together by the unconscious autonomic motion of the viewer moving along the path of exhibition. Content of fantastic imagery alongside the surging darkness of the room served to support a virtual dreamlike state of surrealist awakening, where the dreaming self became a relaxed self—open to suggestion—among a flow of internal remembrances.

In his catalogue review of the Blood Flames show, Calas claimed that both the art works and spectators became “monads in a continuum whose lines have been traced by Kiesler's magic wand. Pictures, statues, [and] spectators are carried by a colorbow into new situations which are to serve as starting point for...personal metamorphosis.” (BF 60) Kiesler constructed his galleries as an array of part objects seamed together in continuum. In this continuum, subjects and objects meld together in endless articulation.

Kiesler's Surrealist galleries posed investigations using cinematographic techniques of perception to diffuse the boundaries between subjects and objects in all his exhibition designs. Similar to Bergson's theories of perception, Kiesler had examined the structure of memory [*Gedächtnis*] to reconstitute experience [*Erfahrung*] by creating a potential environment that induced after-images. Kiesler was attempting as Bergson described in his lesser-known work, *The World of Dreams*, to understand how memories “spring forth” as after-images incited by sensation and stimulation that produce dreams.⁶⁰

⁶⁰ Henri Bergson, *The World of Dreams*, tr. Wade Baskin (New York: Philosophical Library, 1958) 39. I am not convinced Kiesler extensively read Bergson, but instead was influenced by the work of Eggeling and Richter as they were inspired by Bergson. In Steffi Kiesler's “Dream Book Research” however there are a few quotes by Bergson from *Matter and Memory* and *Mind and Energy* including “Waking life is obtained by the limitation, concentration, and tension of that diffuse psychological life which is the life of dreaming.” See Steffi Kiesler, “Dream Book Research,” Box 1, Folder 4 and Folder 7, Held in Kiesler Archives, Vienna. Steffi Kiesler maintained effectively a large scrapbook of quotes from a wide range of sources including Freud, Spinoza, Bergson, Tzara, and Baudelaire to name only a few. These quotes were pages ripped out of books and compiled in no special order, nor do they constitute any clearly defined set of interests besides a series of quotes on dreams from famous people. There are several boxes of these clippings in the Vienna archive.

For Bergson dreams were the products of after-images immanent to matter that spring forth when the conscious mind has become relaxed and we “stop willing.” In autonomic—aconscious—states “disinterested” and surrounded by bodily sensations—visual, aural and tactile, Bergson understood that a dreamer is caught in *suspended animation*, open to a flow of suggestion from both *external* and *internal* stimulus. As Bergson argued, “a dreaming self is a relaxed self. It welcomes most readily incidental, *distracting*, remembrances not characterized by effort.”⁶¹ As the conscious mind relaxes to some extent and attention begins to wander, after-images of memory start to flow forward. These remembrances enter into consciousness in response to visceral, aural, and visual stimulation. As Bergson had observed, conscious perception contracts to make select cuts from an immanent field of images (matter), while in *after-image* memory reconstitutes spatial experience—cinematographically.

For Bergson however, the cinematographic effects of spatial perception present “us with a series of pictorial, but discontinuous, views of the universe” which concerned him immensely. (MM 70) Selected images choreographed in memory seam together a *false sense of spirit and reality* he believed. (MM 59, 71) Bergson instead imagined an ideal state of being not limited to the false experience of cinematographic perception, where “subject and object would unite in an extended perception, the subjective side of perception being the contraction effected by memory, and the objective reality of matter fusing with the multitudinous and successive vibrations into which this perception can be internally broken up.” (MM 70-71) Bergson believed “we [could] touch... reality...in an immediate intuition” and thereby “grasp them [instantaneous visions of the real] in one relatively simple intuition, an endless number of moments of endlessly divisible time.” (MM 70) Bergson hoped humanity could “eliminate all memory” and live immanently in an autonomic state of pure perception and pure memory in pure duration. (MM 70) No longer subject to quantified spatial dimensions of false perceptions, Bergson imagined humanity would again “arrest and retain that which is virtual” outside “cause” and “effect” and exist within an “extended *continuum*” in immediate “action” and “correlation” of mind, body, and soul. (MM 232, 244)

⁶¹ Ibid. 56; my emphasis.

Similar to Kiesler, Bergson believed a split had occurred between reality and vision, and hence his study on *Matter and Memory*. However, according to Benjamin, Bergson's invocation of a pure state of automatism only proved to form a theory of "fictitious characters who ha[d]... completely liquidated their memories" as if in a horror story by Edgar Allen Poe to live "their lives as automatons".⁶² Bergson's philosophy, if even desirable according to Benjamin was realistically unattainable.

Kiesler's gallery designs ultimately did not function as Bergson would have had in mind. They instead performed more similarly to Benjamin's interpretation of Proust, who had at one time endeavored "to produce experience, as Bergson imagines it, in a synthetic way under today's social conditions."⁶³ In Kiesler's galleries, viewers were distracted and motivated into semi-autonomic states of awakening where images presented through shock effects might pass to the psyche. "Parried by consciousness," in a state both conscious and unconscious, these incidents as Benjamin argued would not sterilize poetic experience [*Erfahrung*], but instead associate with the unconscious in memory.⁶⁴ Viewers would experience qualities, feelings, and affects in correlation to experience through surreal recollection. According to Paul Valéry, as Benjamin had argued, "recollection is...an elemental phenomenon which aims at giving us the time for organizing 'the reception of stimuli' which we initially lacked."⁶⁵ In Kiesler's Surrealist galleries, a series of distracting if not shocking image events juxtaposed in *heterogeneous unity* hoped to invoke immanent viewer participation for surreal recollection that initiated the psychic benefits of dreaming.⁶⁶

⁶² Benjamin, *On Some Motifs in Baudelaire*, 330.

⁶³ *Ibid.* 315.

⁶⁴ *Ibid.*

⁶⁵ *Ibid.* 318.

⁶⁶ For Freud, Bergson and Otto Rank dreaming is a state in which our conscious mind remains to some extent active. It is occupied in dream work as the body slows down to rest. Bergson did not differentiate between dreams, daydreams and perception except in terms of time. For Bergson, dreams occur as time is suspended and attention loses focus. Regardless of whether one has their eyes open, the dreaming self is a conscious self, responding in accordance to different rates of action. Bergson believed we are always conscious—to some extent—whether asleep or awake—and dreams are merely an extension of normal perception. Both Freud and Rank also proposed that we are conscious—while dreaming. For Freud dreams provided distraction for the conscious mind to allow the body to stay at rest. For Rank dreams reminded the conscious mind that we "are alive, not dead asleep, for the dreamer thinks and feels as though awake." See Bergson, *World of Dreams*; See also Sigmund Freud, *On Dreams* tr. James Strachey (New York:

Kiesler had long been interested to satisfy the *physis* and the *psyche* of the dweller, and adamantly spoke against modern functionalism in favor of an architecture that might produce more favorable psychic conditions.⁶⁷ In his research practice, Kiesler hoped to heal the split between reality and dreams by inducing intensive, qualitative, spatial atmospheres through cinematographic techniques for curative effect. There is a cathartic effect to dreams, which is not so different to the experience felt from watching television or certain films. As the body rejuvenates at rest, the psyche works out unresolved stress. Similar to Benjamin, who realized some “films trigger a therapeutic release of unconscious energies,” Kiesler began to organize and structure catharsis through the production of dream machinations.⁶⁸

Kiesler used shock effects to stimulate autonomic experience, which aligned to Breton’s longtime interest to derive a state of automatism in Surrealist practice. Breton’s Surrealist Manifesto of 1924 defined surrealism as “pure psychic automatism” in spontaneous creative production without conscious moral or aesthetic self-censorship.⁶⁹ Breton and Philippe Soupault had wrote the first automatist study, *Les Champs Magnetiques*, in 1919 and Breton elaborated their proposal in “The Automatic Message” as published in *Minotaure*, 1933.⁷⁰ In their practice, the Surrealists studied “autonomic, involuntary habit[s]” to derive ways to evade the “control of the thinking man” to produce more creative art, which informed their research into automatic writing and its machines.⁷¹ In inducing autonomic states, Breton hoped to access “*eidetic* (aesthetic) image[s]” that would transform the study of everyday objects into “infinitely changeable” art

W.W. Norton & Co., 1952 renewed 1980); see also Otto Rank, *Seelenglaube und Psychologie* (Wien: Franz Deuticke, 1930); English translation, *Psychology of the Soul* (Baltimore: John Hopkins University Press, 1998) 79.

⁶⁷ Frederick Kiesler, “Pseudo-Functionalism in Modern Architecture,” *Frederick Kiesler 1890-1965*, ed. Yehuda Safran (London: Architectural Association, 1989) 57.

⁶⁸ Walter Benjamin, “The Work of Art in the Age of Its Technological Reproducibility: Second Version,” in *Walter Benjamin: Selected Writings, Volume 3, 1935-1938*, ed. Howard Eiland and Michael Jennings, tr. Edmund Jephcott, and Howard Eiland (Cambridge: Harvard University Press, 2002) 118.

⁶⁹ André Breton, “Manifesto,” in *Manifestoes of Surrealism*, tr. Richard Seaver and Helen R. Lane (Ann Arbor, 1972) 26. For a study of automatism and Surrealism see Hal Foster, *Compulsive Beauty* (Cambridge: MIT Press, 1993) 3, 221.

⁷⁰ See André Breton, “*Le Message automatique*,” *Minotaure* 3-4, (December 14, 1933); English translation, “The Automatic Message,” in André Breton, Paul Eluard, Philippe Soupault, *The Automatic Message, The Magnetic Fields, The Immaculate Conception*, tr. Antony Melville (London: Atlas, 1997) 7-32.

⁷¹ *Ibid.* 22.

forms.⁷² Breton had a “direct interest” to deprive “the distinctions between [the] subjective and objective”—to activate the unconscious through habits of the autonomic nervous system.⁷³ Breton and Kiesler’s similar interests in autonomic states of sensation and action supported their strong mutual affinity.⁷⁴

Although likely informed by similar interests in automatism as Breton, Kiesler developed his study of eidetic images in his Laboratory of Design Correlation from *Eidetic Imagery* by E. R. Jaensch.⁷⁵ Kiesler and his students had transcribed extensive pages of Jaensch’s book alongside compiling a seven-page study of automatism, habits, and eidetic imagery titled “Continuity of Optic Perception, semi-conscious Sight and the Psychic Image”.⁷⁶ As his relationship with Surrealist members developed in the 1940s, Kiesler incorporated a wider range of psychoanalytical studies into his research and writing. Although interested in Freud in his early career, most of Kiesler’s books on Freud including *The Basic Writings of Sigmund Freud*, which included *Interpretation of Dreams*, *Totem and Taboo*, and *Three Contributions to the Theory of Sex*, were obtained after 1938.⁷⁷ Upon working with the Surrealists, Kiesler read Freud’s

⁷² Ibid. 32.

⁷³ Ibid.

⁷⁴ Similar to Kiesler, Breton’s automatist study recognized William James and his interest in F.W. H. Meyer’s study of the imagination, automatism, and subliminal processes. As Breton suggested: “Among Freud’s antecedents I continue to think that, in spite of unfortunately widespread ignorance of his work, we remain more indebted than we generally believe to what William James so aptly called the gothic psychiatry of F.W.H. Meyers [...] I need not labour the point that we have a direct interest in resolving what William James actually called *Meyer’s problem* (strictly psychological), at least as much as in resolving the problem of the (artistic) exchange value we can put on such a form of non-directed expression, or that of the role of (moral) compensation played by automatism. Breton, “*Le Message automatique*,” 17, 32. See also William James, “Frederic Myers’s Service to Psychology,” in *The Works of William James: Essays in Psychical Research*, ed. F. Burkhardt, and F. Bowers (Cambridge: Harvard University Press, 1986) Although it should be noted that within Surrealist literature and its critique there is debate at the extent to which Meyer’s theories impacted Breton’s original ideas on automatism. See Foster, *Compulsive Beauty*, 3-4.

⁷⁵ See E.R. Jaensch, *Eidetic imagery and typological methods of investigation their importance for the psychology of childhood, the theory of education, general psychology, and the psychophysiology of human personality* (New York : Harcourt, Brace, 1930); Kiesler transcribed Part I, pp. 1, 2, 13, 15, 16, as held in the Vision Machine Box, VM_Research excerpts Folder, Kiesler Archive, Vienna.

⁷⁶ “Continuity of Optic Perception, semi-conscious Sight and the Psychic Image,” 1-7, unpublished, undated, unknown author, Vision Machine Box, VM_Research excerpts Folder, Kiesler Archive, Vienna; emphasis in original.

⁷⁷ See Lillian Kiesler, “Personal Library of Frederick Kiesler,” 112.

Leonardo Da Vinci; A Study in Psychosexuality, and José Corti's *Surréalisme et Psychologie*, and began to refer to Freud more often in his writings.⁷⁸

Although Kiesler was enamored by the science of “pragmatic naturalism” in *Magic Architecture*, he clearly articulated that the mythological aspects of his theories of art and life derived from not only the natural sciences but also psychoanalysis. As he explained, “pragmatic naturalism...leaves us, as it often does, with the feeling that we have made art too resolutely functional, too outward looking, too optimistic,” and although “psychoanalysis may be misleading as psychology...the ‘pleasure principle’ and the desperate ‘instincts’ of sex and death give myth a dramatic richness unknown to contemporary pragmatism.”⁷⁹ Kiesler effectively found scientific research that had dominated his interests in the 1930s too limiting. In respect to complex emotional and physical needs and desires latent in the study and practice of architecture, Kiesler turned to study and application of Freudian psychoanalysis and the theory of drives in his work.

Freud originally introduced his theory of the sex and death drives in *Beyond the Pleasure Principle* as a response to trauma of the First World War.⁸⁰ In addition, in *Beyond the Pleasure Principle*, Freud also evolved his study of dreams beyond pure wish fulfillment as he had posed in his *Interpretation of Dreams*, to include the study shock (that notably informed Benjamin's theories on memory and perception). Upon writing *The Ego and the Id*, Freud completed his revisions to his theory of the sex and death drives, which Kiesler began to incorporate into his automatist ideas while working with the Surrealists and writing his book *Magic Architecture* in the 1940s.

For Kiesler and the Surrealists, the automaton was “associated with each of the two classes of instincts,” as understood by Freud: the death instinct—“the task of which is to lead organic life back into the inanimate state,” and Eros—“the sexual instincts,” which “aims at

⁷⁸ Ibid. 113, 115.

⁷⁹ (MA 1, 4 “Enigma of Birth”). See also in prior draft of text: Frederick Kiesler, “The Enigma of Birth,” *Magic Architecture* (n.p., n.d.), Part Four Chapter Four, 4/128, held at the Kiesler Archive, Vienna

⁸⁰ Peter Gay, “Freud: a Brief Life,” in Sigmund Freud, *Beyond the Pleasure Principle*, tr. Joan Riviere and James Strachey (New York: W.W. Norton & Company, 1989), xx.

complicating life and at the same time preserving it.”⁸¹ The Surrealists, as Marcel Jean had explained, originally borrowed the word automatism “from psychiatry [as it]...designates involuntary, unconscious psychic- poetic happenings.”⁸² Automatism, also according to Jean, “contained the passion mixed with anguish of human beings in their relationship with machines that seem always to be on the point of liberating themselves from their creators and leading an autonomous existence.”⁸³ Although fearing the machine and its inevitable autonomy is latent in the passion for automatism, it provided the ultimate fantasy for humanity’s liberation from its mortality.

Similar to Mumford who dreamed of a biotechnic period where humanity would one day merge completely with technology, or the fear and exuberance of robots expressed in Capek’s R.U.R. play—automatism aimed to produce doubles, the inanimate automatons, which both Freud and Otto Rank posed as symbols of repetition for immortal fantasy against death.⁸⁴ Conflating the inanimate double in unity with animate being, automatism for Breton, Mumford, Bergson, and Kiesler—even if conceived altogether differently—hoped to achieve a state of “Nirvana”, or paradise lost.⁸⁵ Automatism relied on the magical promises of technological progress to create a post-human fantasy of primordial unity. Breton’s “vow...to return to a *habitable world*” he declared in exile from Europe in VVV magazine, 1942 corresponded well to these paradisiacal claims.⁸⁶ Surrealists were purportedly homeless, as Breton and his friends left Europe, which conjured nostalgic images of the *uncanny* in their repressed fantasies to return to an ideal home.⁸⁷ Similar to Kiesler, the Surrealists under Breton hoped to recreate paradise lost

⁸¹ Sigmund Freud, *The Ego and the ID*, tr. Joan Riviere and James Strachey (New York: W.W. Norton & Company, 1960), 38.

⁸² Marcel Jean, *History of Surrealist Painting* (New York: Grover Press, 1967) 118.

⁸³ Ibid.

⁸⁴ See Otto Rank, *Der Doppelgänger* (1914, 1925); English translation, *The Double, A Psychoanalytic Study*, ed. Harry Tucker (Chapel Hill: The University of North Carolina Press, 1971)

⁸⁵ For an analysis of Breton, Surrealism, automatism and Nirvana, see Hal Foster. *Compulsive Beauty*, 5.

⁸⁶ See André Breton, “Declaration VVV (1942), reprinted in *What is Surrealism?*, ed. Franklin Rosemont (New York: Pathfinder, 1978) 337. See also Demos, *The Exiles of Marcel Duchamp*, 204, 279.

⁸⁷ See Sigmund Freud, “The Uncanny” [Das Unheimliche] (1919). From Standard Edition, Vol. XVII, trans. James Strachey. London: Hogarth Press, 1955; see also Anthony Vidler, *The*

which inspired their interests working together in New York during the war and in Paris immediately thereafter.

Halls of Superstition

Upon the great success of both the Art of This Century and Blood Flames Exhibitions, Kiesler traveled to Paris to help finish Duchamp's design for the first international surrealist show since 1938 held at the Galerie Maeght in Paris, 1947. The Halls of Superstition would prove Kiesler's last Surrealist exhibition. With the end of the fighting, Kiesler went to Europe with great enthusiasm to produce a remarkable collaborative work. The "main purpose," of the exhibition Kiesler recalled, "was to have artists and sculptors make new works to be integrated with new architecture, lined and bound together by a poet's vision."⁸⁸

The International Exposition of Surrealism was an enormous undertaking that combined over 125 paintings, photographs, and sculptures from over 19 nations.⁸⁹ Breton had replaced Marxist and Communist ideals with his fascination with dreams, and the International Exposition hoped to reunite the Surrealists upon their return to Europe.⁹⁰ Arriving in Paris however, Kiesler found the collaborative spirit after the war completely lacking. "When I followed the call from New York to France to transform the two floors of the Maeght gallery in Paris into a world of surrealism" he recalled, "I encountered with the exception of A. Breton, who headed the idea, and Monsieur Maeght, who lent his place for it, nothing but resistance after resistance from the participating painters, sculptors and workmen to the work to be done." (AR 6) Paris, Kiesler explained was filled with "perpetual melancholia." (AR 6) The city withheld cooperation and failed to deliver materials and labor. "What a call to adventure in the plastic arts," Kiesler remembered, and yet "no one cared to participate. Agony, despair, resentments all around." (AR 6) The political

Architectural Uncanny (Cambridge: MIT Press, 1992) 17-44; see also Foster, *Compulsive Beauty*, 7-17; see also Demos, *The Exiles of Marcel Duchamp*, 203.

⁸⁸ Frederick Kiesler, "Art: Or the Teaching of Resistance," Commencement address give by Frederick Kiesler at The Art Institute of Chicago, Illinois June 12 1959, and presented at the "Art and Education" Conference, The University of Michigan, Oct 18, 1958, 6, Txt 01 Man/Typ Various A, Folder Art or the Teaching of Resistance lecture Materials, Kiesler Archive, Vienna (hereafter cited in text AR).

⁸⁹ "Remembrance of Things Past", Art Section, *Time*, July 21 1947, Expo 1947 Box: Halls of Superstition, Clipping exp_47 clip folder, Kiesler Archive, Vienna.

⁹⁰ Ibid.

and economic life of Europe seemed hopeless at the time to Kiesler, and the biggest obstacle he felt to the collaborative spirit proved the “personal jealousies” and “idiosyncratic personalities” of the artists who refused to work together. (AR 6)

Placed in charge of the design for the Halls of Superstition, Kiesler began to coordinate works by Juan Miró, Duchamp, Matta, Tanguay, Max Ernst, Hare, and Marie Martins. Kiesler’s solution to the discord was to allow the artists to work together as “free coordinates” he explained. (AR 7) He gave them enough leeway to produce their own individual works, yet enough of a framework to maintain a successful result. Kiesler and Breton provided the conceptual framework—a vague notion of superstition, and Kiesler collected all the works within an endless ribbon of space. As Kiesler remembered,

they all followed the composition of the so-called paintings (they were actually free coordinates) without obvious resistance. They were given enough leeway within the framework of the original concept *not to feel dictated*, but most important: the poet’s idea of expressing together the impact of “superstition” was powerful enough to mouthshut any stubbornness to collaborate. Once they were involved in their individual craft they became more and more linked to the idea, and to the complex intricacies of the whole complex.⁹¹

In his gallery design, Kiesler gave the artists enough freedom not to feel overly controlled as they conformed to Breton’s ideas. Kiesler created a loose framework that linked the disparate artists together within an “enveloping architecture”. (AR 6) “The seduction by a poet” and the blindfolded enthusiasm of a belief in chance “converted sordid resistance into *blinding* correlation,” Kiesler explained. (AR 7) Despite recent fascist politics of war however, Kiesler remained hopeful individual spirit might flourish under a unified organization.

Similar to Richter and Eggeling who had hoped to establish a universal language through abstract art that might reconstitute world relationships fractured catastrophically during the First World War, Kiesler hoped to satisfy the physiological and psychological needs of a war-torn society by healing the split between vision and fact. Yet in light of the horrific consequences of extreme nationalism, fascism, and ethnic cleansing during the Second World War, any attempt to reconstruct totalizing unity at that time proved suspect. War had been traumatically destructive, as had attempts to reconstruct world structures under unifying nationalist dogma that became

⁹¹ (AR 7); my emphasis.

fascist. Kiesler's attempt to fuse vision and reality in a state of automatism suggested a frightening proposal—a return to primordial instincts devoid of intellectual debate, criticism, personality, diversity and choice.

Art historian T.J. Demos recently criticized Kiesler for his attempt to recreate an affective atmosphere of primordial unity in his 1942 Surrealist Gallery exhibition.⁹² Kiesler according to Demos created an environment that enabled Surrealist homesick fantasies approaching nationalist if not fascist dogma. Although Kiesler was hardly a fascist, and had little power, money, or control, he did perhaps too ideally believe in the promise of the *Gesamtkunstwerk* to synthesize humanity and its surrounding environment into a perfect work of art. Extrapolating ideas from theater for his exhibition designs, and ultimately his architecture, Kiesler wanted desperately to coordinate people and their surroundings within a semblance of order and control. “We, the inheritors of chaos, must be the architects of a new unity,” he insisted; and Kiesler's passion to incorporate multiplicity in spatial continuity, dominated his ideas regardless of historical, cultural, or political context—*ie the actual environment*—in which he worked. (BF 16)

The Halls of Superstition ultimately proved to Kiesler his most complete work of art since his City-in-Space project, and it attracted over 1,500 curious Parisians to climb the twenty-one gallery stairs on opening day.⁹³ [Fig. 4.25] Breton had hoped the exhibit would evoke “a primordial concern to retrace successive stages of an initiation,” where in order to begin the journey visitors had to overcome their “superstitions”.⁹⁴ Each visitor first had to enter Kiesler's Halls of Superstition before seeing the larger exposition. “To cure man of his anguish” as Arp suggested, Kiesler led visitors into the Hall past Kiesler's *Anti-Taboo Figure* of a large plaster arm and hand with pointed thumb.⁹⁵ [Fig. 4.26] There Kiesler confronted the visitor with his *Totem for All Religions*. [Fig. 4.27] As he described in *Magic Architecture* these figures represented life as a continuity of cycles where,

⁹² Demos, *The Exiles of Marcel Duchamp*, 212-220.

⁹³ “Remembrance of Things Past”.

⁹⁴ André Breton in *Exposition Internationale du Surréalisme: Le surréalisme en 1947*, Exhibition Catalogue (Paris: Galerie Maeght, 1947) 135. As cited by Cynthia Goodman in “The Art of Revolutionary Display Techniques,” 71.

⁹⁵ Jean Arp, “L'oeuf de Kiesler et la Salle des Superstitions,” *Cahiers d'Art*, 22 (1947) 283. As cited by Cynthia Goodman in “The Art of Revolutionary Display Techniques,” 73.

death as we understand it does not exist. Death is rather a punishment, a damnation. It is an act of being ordered into Exile; from there you watch your family; from there you participate in their lives. You become part of their Totem, or you impose Taboos. You either take revenge or help them. Particularly through dreams you take an active hand in their everyday affairs.⁹⁶

Referring to Freud's *Totem and Taboo*, Kiesler's *Anti-Taboo Figure* announced Surrealism's afterlife—their return from exile to participate in everyday Parisian affairs—through both dreams and totems. In light of recent tragedy, Kiesler's Totem spoke to all religions dispersed throughout the world from Babylon to Tibet, including Buddhism, Hinduism, and Orthodox beliefs.⁹⁷ Kiesler built his Totem ideally to protect freedom of religion while shunning taboo and the superstitions that form prejudice and enable fear.

In the Hall of Superstitions Kiesler's intertwining curvilinear ribbons enveloped the works in one cohesive endless space. [Fig. 4.28] Endlessness served the organizational strategy to seam the ceiling, floors, and walls together with the artwork into one continuous free-flowing form. Crocus-yellow bands broke turquoise cloth walls that surrounded and supported the various works.⁹⁸ [Fig. 4.29] Max Ernst painted *Black Lake* the "Feeding-Source of Fear" along the ground, while a scantily clothed woman lounged in the spotlight as she "nourishe[d]...anguish".⁹⁹ [Fig. 4.30] *Waterfall* by Miró "congealed by superstitions," cascaded along the ribbon.¹⁰⁰ Hare suspended his *Anguished Man Sculpture* beneath the color bow, while Matta composed *Whist* with the "luck of the owl, crow, bat, woman" open to view from a hole in the wall.¹⁰¹ [Fig. 4.31] Surrealist fantasies of sex and fear—desire, consumption, and anguish were *correlated* into a total work of art. [Fig. 4.32] The Halls of Superstition performed as a unified environmental sculpture, but unlike Kiesler's past exhibitions, the series of art works composed a narrative

⁹⁶ (MA 1, 8, 5); emphasis in original.

⁹⁷ See Frederick Kiesler, *Totem for all Religions*, 1947, Lillian Kiesler Papers, Contact Sheets, Smithsonian American Archives of Art, Washington D.C.

⁹⁸ "People in the News," as held in Expo 1947 Box: Halls of Superstition, Clipping exp_47 clip folder, Kiesler Archive, Vienna.

⁹⁹ See Frederick Kiesler, *Black Lake*, Photograph, Paris 1947, Box: Halls of Superstition, Expo 1947 Reproduction Folder, Kiesler Archive, Vienna. See also *Exposition Internationale du Surréalisme*, 134. As cited by Cynthia Goodman in "The Art of Revolutionary Display Techniques," 73.

¹⁰⁰ See *Exposition Internationale du Surréalisme*, 134. As cited by Cynthia Goodman in "The Art of Revolutionary Display Techniques," 73.

¹⁰¹ Ibid.

theme. The Halls of Superstition despite conflict among the artists performed one ambition—to relieve passersby of their fear and suffering by evoking their dreams and superstitions.

In the post-war context, however the Halls of Superstition proved a complete failure; the critics agreed the, “observers discounted the big talk”.¹⁰² If Surrealists hoped to shock society, their effort appeared delusional if inept. “After the gas chambers, [with] those heaps of bones and teeth and shoes and eyeglasses, what is there left for the poor Surrealists to shock us with?” reacted one critic.¹⁰³ The surrealist exhibition in Paris was “a most depressing spectacle” John Devoluy of the *Art News* also explained.¹⁰⁴ “In spite of its fantastic presentation, its elaborate catalogue, and its literary hoop-la, it misses fire entirely,” Devoluy bluntly complained.¹⁰⁵ For Europeans who survived the war, the Surrealist antics seemed incapable of affecting any value, and hardly proved revolutionary. Paris had become accustomed to shock—they had survived the war, and any nostalgic fantasy of uncanny recollection that hoped to repeat repressed fantasies of paradise lost through *haunting visions* and *immanent affections* no longer sufficed.

¹⁰² “Remembrance of Things.”

¹⁰³ Ibid.

¹⁰⁴ John Devoluy, “Art News in Paris,” as held in Expo 1947 Box: Halls of Superstition, Clipping exp_47 clip folder, Kiesler Archive, Vienna.

¹⁰⁵ Ibid.

5. Introjection and Projection: Frederick Kiesler and his Dream Machine

The difficulty in reflecting on dwelling on the one hand, there is something age-old—perhaps eternal—to be investigated here, the image of the abode of the human being in the maternal womb...[O]n the other hand...we must understand dwelling in its most extreme form.... The original form of all dwelling is existence not in the house but in the shell. The shell bears the impression of its occupant. In the most extreme instance, the dwelling becomes a shell.

Walter Benjamin

The surrealists positioned themselves in opposition to modern architecture as reflected in well-known public disagreements between Breton and Le Corbusier. Surrealist members argued against the sterile over-rationalized technological realism of modern building in favor of more habitable architecture.¹ Tzara and Matta best described surrealist architecture in the eclectic journal *Minotaure* during the 1930s. In 1933, Tzara wrote against modern aesthetics that deny human dwelling in favor of architecture with intrauterine appeal.² He called for a new serenity of “prenatal comfort” ushered in by the qualities of “soft tactile depths” experienced inside “circular, spherical, and irregular houses.”³ From a “cave” or “tomb” in the “hollows of the earth,” Tzara believed “health” could be restored in the realm of “luxury, calm and voluptuousness.”⁴ Similar to Tzara, in 1938 Matta argued for a folded body wrapping architecture of “wet walls” and “appetizing” “furniture” that fit with “molded profile” our “infinite motions” according to “life intensity” as “umbilical cords” “like plastic psychoanalytic mirrors.”⁵ [Fig. 5.1] Matta envisioned architecture that could “get out of shape” to “fit our psychological fears,” and relieve “the body of

¹ See Vidler, *The Architectural Uncanny: Essays in the Modern Unhomely*, 150.

² Tristan Tzara, “On a Certain Automatism of Taste,” *Minotaure*, no. 3-4, December 1933, 84, as translated in *Autobiography of Surrealism*, ed. Marcel Jean (New York: Viking Press, 1980), 337.

³ Ibid.

⁴ Ibid.

⁵ Matta Echaurren, “Sensitive Mathematics—Architecture of Time,” *Minotaure*, no. 11, May 1938, 43, as translated in *Autobiography of Surrealism*, ed. Marcel Jean (New York: Viking Press, 1980), 339.

all the weight of...[its] right-angle past.”⁶ Matta had described a provocative surrealist project, which sought to create *alloplastic* architecture modulating to the infinite transformations of the body in motion.⁷ Unconscious sensual desires could be forever satiated with flexible architectural skins moving in response to our every need. For Tzara and Matta non-rectilinear houses embodied surrealist architecture—one which Kiesler had been well on the way to developing.⁸ Kiesler’s now well-known Endless project—since its inception, served to nurture the dweller inside an embryonic casing of eggshell construction, and eventually as the design developed inside the cave-like bodily expression of intrauterine digestion. [Fig. 5.2] As the surrealist artist Arp reportedly described, “in [Kiesler’s] egg, in these spheroid egg-shaped structures, a human being can now take shelter and live as in his mother’s womb.”⁹

The First Shelter

Kiesler began his formal study of human shelter in the 1920’s while living in Vienna and Paris. Kiesler purportedly trained under Loos in 1920 on a worker housing project constructed at Heuberg, for the City of Vienna, 1921.¹⁰ In addition to working with Loos, Kiesler made several provocative housing proposals over the following years. Besides his successful *de Stijl* City-in-Space structure, Kiesler designed a megastructure complex—“a horizontal skyscraper”—to span

⁶ Ibid.

⁷ For more on alloplasticity (to change or mold the external world to reflect the unconscious) versus autoplaticity (to change one’s body) see Otto Rank, *Trauma der Geburt*, (Leipzig: Internationaler Psychoanalytischer Verlag, 1924); English translation, *The Trauma of Birth* (New York: Dover Publications, Inc., 1993) 101 (hereafter cited in text as OR). The terms alloplastic/autoplatic originated with Sandor Ferenczi, who later collaborated with Rank.

⁸ Tzara, “On a Certain Automatism of Taste,” 337. Tzara and Kiesler had been friends since 1924. They were in close contact between 1925 and 1931; Tzara had received several letters from Kiesler. See research conducted by Valentina Sonzogni, “Correspondence Frederick Kiesler-Tristan Tzara in the Bibliotheque Littéraire Jacques Doucet,” in the Austrian Frederick and Lillian Kiesler Private Foundation Archive, Vienna (hereafter referred to as the Kiesler Archive, Vienna). Matta and Kiesler became friends in the 1940s.

⁹ Quoted by Dalibor Veseley, in “Surrealism and Architecture,” *Architectural Design* 48, nos. 2-3, 1978, 94. See also Vidler, *The Architectural Uncanny*, 153.

¹⁰ “Curriculum Vitae, Frederick J. Kiesler Architect,” 1 (see chap. 3, n. 54). According to Levinson and Fuller, these were the first slum-clearing projects for city. See “Frederick Kiesler,” n.p., n.d., Maxwell Levinson Archive: vertical file, Frederick Kiesler Folder, the Canadian Center for Architecture Collections, Montreal. Text is likely a draft of Fuller’s introduction to Frederick Kiesler, “Festival Theater: The space Theatre for Woodstock, N.Y.,” *Shelter* (Vol. 2, No. 4: May 1932) 42.

the intersection of Place de Concorde in Paris, 1925.¹¹ [Fig. 5.3] As recalled by Richter, this project was “the breakthrough of the real Kiesler...the man with ‘total’ plans,” who “like a man possessed” transformed the “anyhow useless” square into a “skyscraper-junction from which huge highways were supposed to lead out of Paris in all 4 directions.” (R 1) Within the square, Kiesler inserted four central blocks on each corner of a highway intersection to provide parking alongside “wide-stretching wings” of housing units. (R 1) He raised living quarters off the ground above the street adjacent to open park areas. In contradistinction to Le Corbusier’s linear city concepts for Algiers and Rio de Janeiro of the 1930s, Kiesler staggered housing blocks open to above and below for air and light as opposed to piling housing on top of each other “like boxes”. (R 1) “Anybody who has ever tried to drive out of Paris or rather limp should appreciate such a plan,” Richter surmised; nevertheless, as he recalled, the Parisians had no interest in Kiesler’s plans. (R 1)

While living in Paris in 1925, Kiesler and his wife Steffi developed close relationships with the van Doesburgs, Tzara, and Jean and Soffie Arp. In addition, they met with Mies, Le Corbusier, Loos, and Richter.¹² Before leaving Paris for New York, Kiesler made site visits to Tzara’s house designed by Loos while in construction.¹³ Kiesler and Tzara shared mutual affinity for Loos’ work. Tzara met Loos in Zurich, and was instrumental in his move to Paris in 1923.¹⁴ They began working together on the design and construction of Tzara’s house in 1925.¹⁵ In March 1925, Kiesler wrote to Tzara asking “*Wie geht es Loos? Und [e]urem Haus?*”¹⁶ Kiesler was very interested in Tzara’s house, and Steffi, Friedrich, and Tzara had met with Loos at “Laviq

¹¹ Richter, “Koepfe und Hinterkoepfe,” 1 (see chap. 1, n. 13; hereafter cited in text as R).

¹² Lisa Phillips, 140.

¹³ See letter from Kiesler to Tzara, October 12, 1925, research conducted by Valentina Sonzogni, “Correspondence Frederick Kiesler-Tristan Tzara in the Bibliotheque Littéraire Jacques Doucet,” 3, Kiesler Archive, Vienna; my translation from German.

¹⁴ Kenneth Frampton, “Introduction” in the *Architecture of Adolf Loos*, ed. Y. Safran and W. Wang (London: Arts Council, 1985) 12. See also Krzysztof Fijalkowski, “Un Salon au fond d’ un lac’: The domestic spaces of surrealism,” in *Surrealism and Architecture*, ed. Thomas Mical (London: Routledge Press, 2004) 22.

¹⁵ *Ibid.*

¹⁶ See letter from Kiesler to Tzara, March 3, 1925, research conducted by Valentina Sonzogni, “Correspondence Frederick Kiesler-Tristan Tzara in the Bibliotheque Littéraire Jacques Doucet,” 3, Kiesler Archive, Vienna.

[possibly the Grand Hotel Leveque] Montparnasse” that same year for a meal.¹⁷ Kiesler visited the construction site in October and proposed to send Tzara construction pictures of Loos, the supervisor, and his workers on site upon Kiesler’s next visit to the house.¹⁸ The Tzara House proved a significant building project for Loos, and perhaps an important impetus for Tzara’s surrealist housing ideas in addition to Kiesler’s formative dwelling designs.

It is possible that living in a modern house by Loos prompted Tzara’s reaction against modern architecture in favor of warm palpable spherical constructions. While living in Paris between 1925 and 1926 however, while Kiesler designed his spheroid-matrix shape Endless Theater, neither Kiesler nor Tzara indicated anything but admiration for Loos in their letters to each other. Although in the 1940s Kiesler would attack Loos for his sterile housing concepts, Loos’ house designs resist Kiesler’s later criticism.

Although strongly opposed to ornament in favor of plain quality production, Loos similar to Semper also believed in the “Principles of Cladding”.¹⁹ For Loos the architect’s first task was “to provide a warm livable space,” and the “second task” he explained was to build structure that supported similar to Semper varied surface materials that both veiled and revealed meaning.²⁰ Loos designed interior spaces with overt *character* using different cladding materials that expressed sensual qualities.²¹ On the exterior however, Loos believed the design had to respond to the needs of a wider audience. On the outside—ornament is a crime—and he stripped the

¹⁷ See Letter from Steffi Kiesler to Tzara, November 29, 1925, research conducted by Valentina Sonzogni, “Correspondence Frederick Kiesler-Tristan Tzara in the Bibliotheque Littéraire Jacques Doucet,” 3, Kiesler Archive, Vienna; my translation from German.

¹⁸ See Letter from Kiesler to Tzara, October 12, 1925.

¹⁹ See Semper, “Style in the Technical and Tectonic Arts or Practical Aesthetics: A Handbook for Technicians, Artists, and Patrons of Art (1860),” 190; see also Semper, “The Four Elements of Architecture: A Contribution to the Comparative Study of Architecture (1851)” 102-104 (see chap.4, n. 34). See also Adolf Loos, “The Principle of Cladding (1898),” in *Spoken into the Void: Collected Essays 1897-1900*, tr. Jane O. Newman and John H. Smith (Cambridge: MIT Press, 1982) 66-69. For more on Loos and Semper, see Beatriz Colomina, *Privacy and Publicity: Modern Architecture as Mass Media*, (Cambridge: MIT Press, 1994) 265.

²⁰ Loos, “The Principle of Cladding (1898),” 66.

²¹ See Colomina, *Privacy and Publicity*, 32-33. See also Adolf Loos, “Architectur” (1910); English translation “Architecture,” in *The Architecture of Adolf Loos: An Arts Council Exhibition* (London: Arts Council of Great Britain, 1985) 104-109.

walls to bare expression.²² Loos believed society should suppress individual artistic tastes behind a mask.²³ Art instead served a cathartic role for the aristocrat on the interior. “We have art, which has taken the place of ornament,” Loos said for “after the toils and troubles of the day we go to Beethoven or to Tristan.”²⁴ Relegated to the interior for curative effect, art for Loos sustained public life in the face of Modern *Kultur*.²⁵ In 1930, Tzara admired Loos’ fortitude to attain “a human possibility of clarity, within the hub of social activity.”²⁶ Tzara more likely realized his surrealist vision in light of Loos’ concept of dwelling rather than in spite of it. Loos created houses as masks or protective shells that comforted the human psyche in palpable warmth to support the psychological needs of modern dwelling.

Similarly interested in Loos’ work as Tzara, Kiesler translated “Ornament and Crime” into English, and later lectured on the subject in 1932.²⁷ Kiesler studied the text and proved in his writing “On Correalism and Biotechnique” to reproach ornamental crafts similar to Loos, in favor of streamlining laboring processes, reducing costs to consumers, and avoiding wasted materials. Similar to the *plain shoe modernism* that Loos had prescribed to form a “completely smooth” modern aesthetic—Kiesler anticipated the coming of a new form of architecture that maintained the fewest joints, connections, and parts as possible.²⁸ However, different from Loos, Kiesler did not intend to cover the structure. Kiesler hoped to merge art into the walls of construction to create a unified design—a total work of art. Kiesler’s egg-shaped shell superimposed with projection images was his initial proposal to fuse art with walls that both veiled and revealed the art of structure. Although Kiesler did not intend his Endless Theater to be a house, as he wrote in

²² Adolf Loos, *Ornament und Verbrechen*, trans. “Ornament and Crime” (1908), *Programs and Manifestoes on 20th-century architecture*, ed. Ulrich Conrads (Cambridge: MIT Press, 1975) 19-24.

²³ *Ibid.* 24.

²⁴ *Ibid.*

²⁵ For more on the public and private spaces of Loos’ architecture see Colomina, *Privacy and Publicity*, 233-281.

²⁶ Tristan Tzara cited in Safran and Wang, *Architecture of Adolf Loos*, 78. As found in Fijalkowski, “Un Salon au fond d’ un lac,” 23.

²⁷ Valentina Sonzogni, “Biography,” in *Friedrich Kiesler Designer: Seating furniture of the 30s and 40s*, ed. Austrian Frederick and Lillian Kiesler Private Foundation (Ostfildern-Ruit: Hatje Cantz Verlag, 2005) 122. See also Adolf Loos, “Ornament and Crime”, tr. Frederick Kiesler, n.p., n.d., Kiesler Archive, Vienna.

²⁸ Loos, “Ornament and Crime” (1908), 24.

On Correalism and Biotechnique, it was his “first directed effort at a method of Continuous Construction” for building design.²⁹

As early as 1925, Kiesler advanced a new structural principle in contradistinction to traditional frame building techniques. Conflating his *de Stijl* practice with constructivist and futurist stage techniques, Kiesler composed his tension shell structure to reduce joints by unifying walls, ceilings, and floors into one expansive environment. Kiesler however did not have the engineering skill or technical wherewithal to develop his interest in tension shell construction. In his 1930s show window design publication, Kiesler acknowledged advances made in the history of steel and concrete design were leading towards this new method of construction—similar to what Viollet-le-Duc had realized in the historic shift from stone to iron.³⁰ From the heavy and static construction of steel posts and beams, to advances in steel trusses by several bridge designers, to the sprayed concrete encased steel skeletal dome at the Zeiss Planetarium, 1926—Kiesler foretold of “The Coming Tensionism” in building practice.³¹ [Fig. 5.4, Fig. 5.5] Sigfried Giedion would later in 1941 explain a similar historical progression, identifying Swiss bridge builder Robert Maillart and Parisian architect Freyssinet with the first eggshell concrete constructions beginning around this same time.³² For Gideon the “lithe, elastic resilience with

²⁹ Kiesler, *On Correalism and Biotechnique*, most complete version, 68 (see chap. 3, n. 135).

³⁰For example, in the use of stone and ironwork by Viollet-le-Duc thinness of stone developed in the construction of flying buttresses to represent developing knowledge regarding the laws of statics. This effort to express thinness in stone seeded and inspired the necessity and evolution for the appropriate use of iron. Iron was developed and used to advance an already existing interest in thinner structural elements advanced through statistical knowledge. In which case, materials and their rhetorically correct and true use were generated by and subordinate to developing construction techniques. They were used in accord with previous and expected static properties in relation to newly developing technologies, and not material expression unrelated to construction. See Martin Bressani, “The Life of Stone: Viollet-le-duc’s Physiology of Architecture,” *Architecture New York: Tectonics Unbound, No. 14*, Ed. Cynthia C. Davidson (New York: Anyone Association, 1996).

³¹ Kiesler, *Contemporary Art Applied to the Store and its Display*, 48,50, 53, 55 60,61 (see chap. 2, n. 5) In 1952 Victor Harasty, a former faculty member of the Design-Laboratory of the W.P.A. Project would later write on Kiesler’s behalf to the Editor of Art and Architecture section of the *New York Times* to remind him that the detail of the dome of Fuller they published August 31, 1952 was not new. Neither the idea of the dome, the building, method, nor the photograph was originally Fuller’s as they bore striking similarity to the Zeiss Planetarium in Jena. See Letter Victor Harasty to the Editor Art and Architecture, September 9, 1952, Frederick Kiesler Papers, Box 4 of 7, Correspondence 1951-1952 Folder, Smithsonian American Archives of Art, Washington D.C.

³² Sigfried Giedion, *Space Time and Architecture* (Cambridge: Harvard University Press, 1941; 5th edition, reprinted 1997) 450-476.

which” Maillart’s bridges leap their chasms approached pure plastic expression through structure like none other.³³ Maillart had the technical skill and capacity to form the first continuous tension shell structures in steel reinforced concrete, which gave Kiesler’s structural interests real possibility.

Modern Housing

Kiesler did not employ his new structural scheme for his first single-family housing design in 1931. Similar to Le Corbusier’s Citrohan House (1922), Kiesler designed his speculative “Nucleus House” in cellular fashion to fit the scale and approach of modern cars alongside an expandable roof terrace supported on *pilotis*. [Fig. 5.6] Despite his later oppositional attack on Le Corbusier and Loos, Kiesler derived his understanding of modern housing from learned study of their work. Kiesler used frame construction common to Le Corbusier (and Mies) for his Nucleus House. He provided a drive-through entryway adjacent to a curved stair tower that led to a rooftop or second floor living space reminiscent of Le Corbusier’s Villa Savoye. Like the Citrohan House, floor area could be added on the ground floor or on the roof plan to increase the size and shape of Kiesler’s two-story scheme. Kiesler proposed four versions of a standard type unit reminiscent of Le Corbusier’s Quartier Fruges housing project in Pessac. Kiesler intended to mass-produce the Nucleus House in linear fashion to create one housing block similar to his 1925 “Horizontal Skyscraper”. [Fig. 5.7]

In 1933, Kiesler traveled to Chicago and presented his Nucleus House scheme to Sears & Roebuck.³⁴ Although Sears and Roebuck did not pursue Kiesler’s prototype, the strong modern elements of his design informed his innovative “Space House” project that same year. While in Chicago, Kiesler visited the World’s Fair with gallery owner and friend Sidney Janis (Janowitz).³⁵ His Space House proved to excel beyond anything seen at the fair. “The world is moving at a fast

³³ Gideon, *Space Time and Architecture*, 461. Concrete has a long history since antiquity, but it was not used in thin tension shells until Robert Maillart in 1926 and Freyssinet in 1929. See also David P. Billington, *Robert Maillart and the Art of Reinforced Concrete* (Cambridge: MIT Press, 1991).

³⁴ Letter from Frederick Kiesler to Steffi Kiesler, January 15, 1933, Kiesler Archive, Vienna; translated from German in Krejci, “Seat Furniture as Architecture,” 33 (see chap. 3, n. 55).

³⁵ Letter from Frederick Kiesler to Steffi Kiesler, January 10, 1933, Kiesler Archive, Vienna; translated from German in Krejci, “Seat Furniture as Architecture,” 33.

pace these days,” wrote one critic from the *New York Sun*, “Chicago’s Century of Progress Exposition has still two weeks to run, but the modernistic model houses that were knocking ‘em cold there all summer have already been outmoded. The ‘Space House’ is the latest thing,” this newspaper critic decried.³⁶

The Space House

Kiesler exhibited his full-scale prototype of the Space House for the Modernage Furniture Company in New York City, 1933. [Fig. 5.8] The Space House was a decisive building project for Kiesler as it would prove a rare opportunity for him to construct his housing ideas. Kiesler “was never eager to build”—“no building at the moment can satisfy,” he admittedly stated because “no organic result in Buildings can [yet] be achieved.”³⁷ For Kiesler, the technology to construct continuity did not exist. The Space House proved only “a proportionate substitute with actual possibilities to the original plan”.³⁸ The Space House presented Kiesler’s innovative structural principle—continuous tension shell construction—without having to answer to the demands of durability; it was a temporary structure built to challenge contemporary ideas.

Originally intended as a display for advertisement, Kiesler’s Space House attracted visitors to the 33 furnished showrooms at the Modernage Furniture Company headquarters on East 33rd Street.³⁹ Although Kiesler had little practical experience in housing design, his knowledge of show window, exhibition, theater, and furniture design well suited the commission. As a member of the AUDAC, Kiesler had recently garnered a reputation for several creative furniture pieces for private clients and showroom displays that included a *Flying Desk* inspired by the City-in-Space project. [Fig. 5.9] In the 1930s, Kiesler held exhibits with modern furniture

³⁶ “And Now It’s the Space House: Latest Thing in Dwelling Likely to Leave You Gasping With Surprise,” *New York Sun*, 14, Clippings, Space House Folder, Kiesler Archive, Vienna.

³⁷ Kiesler, “Notes on Architecture: The Space House—Draft,” 1933, 2, Unpublished miscellaneous sketches, notes, and drafts, Space House Folder, Kiesler Archive, Vienna; emphasis in original.

³⁸ *Ibid.* 1. See also Frederick J. Kiesler, “Notes on Architecture: The Space-House,” *Hound & Horn*, January: March 1934.

³⁹ For the Space House as modern advertisement See Beatriz Colomina, “La *Space House* et la psyche de la construction,” in *Frederick Kiesler: Artiste-architecte, Colletion Mongraphie* (Paris: Centre Georges Pompidou, 1996) 67-77; English translation, “De psyche van het bouwen: Frederick Kiesler’s Space House,” *Archis*, November 1996, 71.

designers Donald Deske, Wolfgang and Pola Hoffman, Willis Harrison and Alexander Kachinsky.⁴⁰ The Modernage Furniture Company hired Kiesler for his potential to rejuvenate their style and image, and lure customers into showrooms that had most recently displayed outmoded French-style Art Déco motifs.⁴¹

In support of his own design, Kiesler published an extensive description of the Space House in *Hounds & Horn* magazine in March 1934. Kiesler divided his article into three parts: the social requirements of the house, the tectonic solutions to achieve those requirements, and the structural technology used for building the exterior shell. In the social realm Kiesler insisted housing should support relationships between family and groups, but must also provide for “complete seclusion,” “physical separation,” “privacy,” and even “semi-seclusion.”⁴² The Space House ideally provided introverted living for every member of the household, and as Kiesler remarked,

[the house] must act as a generator for the individual. His generated forces are to be discharged to the outer world. The outer world: his own family or any outer group. The house is built on this two-way principle: charging and discharging through a flexibility that is contracting and expanding.⁴³

For Kiesler the house served to charge the individuals energy forces for discharge back into the external world. As Kiesler represented in a series of unpublished notes and sketches on the Space House, his concept of contraction converted the house over time to provide a sense of security through individual space enclosures that could then expand to provide for group interactions and ultimately outer world experiences. [Fig. 5.10] Kiesler anticipated time could be a factor in the use of the house, where the building could transform in accord to the needs of varied events.⁴⁴

Kiesler argued the house functioned through an organic machination of metabolic processes where the “individual passing through time” was “subjected to two forces; Anabolism:

⁴⁰ Krejci, “Seat Furniture as Architecture,” 21.

⁴¹ Krejci, “Seat Furniture as Architecture,” 27.

⁴² Kiesler, “Notes on Architecture: The Space-House,” 294.

⁴³ Ibid.

⁴⁴ Ibid. See also Colomina, “De psyche van het bouwen: Frederick Kieslers Space House,” 74.

building up; Catabolism: breaking down.”⁴⁵ [Fig. 5.11] Kiesler believed that within all objects, whether animate or inanimate, there was a constant exchange of these two categories of mutating forces.⁴⁶ As the individual, he suggested, passes horizontally to the world outside, vertically into the inner-world, parabolically to work, and spherically for play—the house interacted and exchanged forces with the dweller. This was achieved, he said, through the “*the mobile space enclosure, and the individual as qualified by it.*”⁴⁷ [Fig. 5.12] “This expansion and contraction is a propensity of the house,” he argued, and it was achieved tectonically through a series of push button roll down doorways, flexible sponge-rubber carpets, rollaway curtains and sliding partitions.⁴⁸ Despite its delimited form the Space House created a variety of mobile-flexible environments suited to varied temporal needs.⁴⁹ [Fig. 5.13] Kiesler intended the “whole house to be one living room” of “static-flexibility” that could adjust as needed.⁵⁰ The house was not to be fixed in time but was intended to transform to the needs of human dwelling keyed to the changing and evolving necessities of the inhabitant.

Kiesler’s design for the Space House project elaborated the former design strategies of his show window, film, and theater projects to create a contracting and expanding interior space.⁵¹ Additionally, the Space House introduced ideas on construction technology that he later advanced in his Design-Correlation laboratories. Kiesler’s design for his Space House project sought to envelop dwelling within a mobile-flexible architecture that served to cultivate the body in coordination to daily habits. It could charge and discharge one’s energy forces geared to interactions of everyday life. [Fig. 5.14] The house engaged the body physically—tactilely, and its

⁴⁵ Frederick Kiesler, “Metabolism Chart of the House,” 1933, Unpublished miscellaneous sketches, notes, and drafts, Space House Folder, Kiesler Archive, Vienna.

⁴⁶ See Kiesler, “On Correalism and Biotechnique: a definition and the new approach to building design,” 61 (see chap. 3, n. 92)

⁴⁷ Kiesler, “Metabolism Chart of the House”; italics added.

⁴⁸ Frederick Kiesler, “Architectural Solution,” 1933, 1, Unpublished miscellaneous sketches, notes, and drafts, Space House Folder, Kiesler Archive, Vienna. Revised when published to “This expansion and contraction possibility is the fundamental concept of the house.” See Kiesler, “Notes on Architecture: The Space-House,” 294.

⁴⁹ Ibid.

⁵⁰ Kiesler, “Notes on Architecture: The Space House—Draft,” 1933, 1.

⁵¹ Kiesler developed ideas already articulated in his Endless and Film Guild Theaters for his Space House. He elaborated his concept of “a house of silence” to create an environment that provided seclusion while at the same time destroyed the sensation of confinement. Families and groups coexisted with individuals seeking an introverted lifestyle.

form took shape in correlation to varied use. The house was intended to move in response to the body with seamless organic expression. "Stream-lining becomes here an organic force," Kiesler described, "as it relates the dynamic equilibrium of body-motion within encompassed space."⁵² The "proprio-spatial dynamic" function of the house, he argued, was its ability to seam together complex components into one physically and visually elastic space.⁵³

Touch and vision were essential to the dynamic function of the house. Published in a series of images in *Architectural Record*, Kiesler presented a shoe subtly applying pressure to an elastic sponge rubber carpet or a scissor tearing through the veil of a net fabric ceiling.⁵⁴ [Fig. 5.15, Fig. 5.16, Fig. 5.17] In the article, he presented cropped images of materials in provocative juxtaposition to each other and objects of everyday use that elicited feelings of something beyond, something else, something imagined, something endless. In the Space House Kiesler used materials to envelop the habitant in tactile protective layers, which provided varied function to facilitate "sound proofing," "isolation," and "vision."⁵⁵ Achieving both flexibility and security, Kiesler provided comfort through tactile pleasures—temporal and sensual. [Fig. 5.18] Kiesler's materials served as screens that could be drawn to veil or be pulled back to reveal the outside world.

Kiesler recognized materials have "psycho-functions" that can be utilized to stimulate the psyche.⁵⁶ As Colomina argues in her recent analysis of Kiesler, the erotic "sensuality of Kiesler's house extends from touch into the visual freedom the design affords and beyond into the psyche."⁵⁷ [Fig. 5.19] As Kiesler expressed in his sketch of this concept, the sensing terrestrial body is surrounded in a world of objects with arrows and lines that all interrelate and establish a

⁵² Kiesler, "Notes on Architecture: The Space-House," 296.

⁵³ Ibid.

⁵⁴ Frederick Kiesler, "Space House." *Architectural Record*, v. 75 (January, 1934): 44-61.

⁵⁵ Kiesler, "Notes on Architecture: The Space-House," 295.

⁵⁶ See Kiesler, *Contemporary Art Applied to the Store and its Display*, 87.

⁵⁷ As Kiesler wrote on his notes on the Space House, "our senses are not given us to enlarge our knowledge of the universe but to limit our capacity of understanding. In that respect we could clarify the degree of limitation of our senses, like: 1) touch – shortest; 2) taste-next; 3) smell – next; 4) ear-next; 5) eye-next; 6) conscience-(?) longest." See Colomina, "De psyche van het bouwen: Frederick Kiesler's Space House," 76. Touch, considered closest to our body, senses what is close at hand and has its limits to understanding. Kiesler's architecture attempted to pass through the tactile senses in a state of "complete seclusion" or "semi-seclusion" to expand our conscience perception of the universe.

perceptual boundary of the “stellar spectra.” Kiesler’s architecture attempted to entice perception to pass through the tactile senses through the *psyche* and then beyond to outer space.

The Space House curiously functioned quite similarly to Freud’s 1923 idealization of the bodily ego.⁵⁸ In mapping a diagram of *The Ego and the Id*, Freud constructed the ego as a spatial body generated from the nucleus of conscious perception.⁵⁹ The ego, Freud mapped as a surface that separated interior and exterior relationships. [Fig. 5.20] It housed unconscious psychical systems within a hard semi-permeable membrane that formed in response to external and internal stimulation. As Freud described in *Beyond the Pleasure Principle*, the ego formed a shell—an inorganic shield—that protected unconscious energies by becoming resistant to external stimuli, while in turn controlling the relative discharge of mobile cathectic excitations of the internal drives—the instincts—back into the external world.

These instincts influencing the Id, and in turn the Ego, Freud articulated as the drives of sex, Eros—and of death—Thanatos. They underlie all basic life functions and commingle in Freud’s theory on a molecular level, where both kinds of instincts were active and fused in every living particle to varying degrees in time.⁶⁰ Freud described their interaction as an “organic elasticity” of special physiological “catabolic” and “anabolic” processes that fused, blended, and alloyed themselves together in *tension*.⁶¹ Under stress from too much tension, the shell of the ego became susceptible to fracture. Either the ego then discharged protective cathexes to strengthen its shell, discharged energy to relieve pressure, or when faced with excessive real danger relied on the flight-reflex to seek alternative protection—a wish fantasy Freud allied with the desire to return to the womb.⁶² As a response to the trauma of the First World War, in his

⁵⁸ Elaborating on his theories generated in response to the trauma of the First World War in *Beyond the Pleasure Principle* (1920), Freud proposed a “structural theory” of the mind in the *Ego and the Id*. He identified three distinct yet dynamic interacting agencies: the entirely unconscious Id that holds repressed perceptions and the drives; the partially conscious super ego—or ego Ideal that harbors the conscience and feelings of guilt; and the more conscious ego that derives from bodily perception and formulates a mental projection of the surface of the body—our bodily ego. See Gay, “Freud: a Brief Life,” in Sigmund Freud, *Beyond the Pleasure Principle*, xx. See also Freud, *The Ego and the Id*, 20, 36 (see chap. 4, n. 81).

⁵⁹ See Freud, *The Ego and the Id*, 18.

⁶⁰ *Ibid.* 38.

⁶¹ Sigmund Freud, *Beyond the Pleasure Principle*, tr. Joan Riviere and James Strachey (New York: W.W. Norton & Company, 1989), 43. See also Freud, *Ego and the Id*, 38.

⁶² Freud, *Ego and the Id*, 61.

study of shock, Freud deduced his structural theory of the mind with an analogy to the therapeutic effects of housing and protecting the sensorial and motor functions of the bodily ego within the shell of the cerebral anatomy.⁶³

Kiesler's architecture by 1933, whether intended or not—prior to entrenching himself into ideas of the surrealist group—aimed towards similar therapeutic interests to protect the psyche through shelter design.⁶⁴ “Houses are defense mechanisms,” Kiesler later explained in *Magic Architecture* that “give physical expression to the sheltering of [the human]...psyche.”⁶⁵ For Kiesler the house served psychoanalytic purpose, to heal the mind, body, and soul from the traumatic events of everyday life. The Space House was his first attempt towards that goal.

Kiesler designed his Space House as a perceptual boundary or semi-permeable shell similar to Freud's diagram of the Ego and the Id that could respond to inner needs while at the same time resist external pressures. [Fig. 5.21] The structural “outer shell” of the house facilitated the flux and flow of physical and psychical force.⁶⁶ It acted like a cellular membrane that provided as Kiesler said, “flexible division between outdoor and indoor.”⁶⁷ It was “not a wall,” Kiesler remarked, but instead provided glass panels for optic contact, movable-glass for physical contact and terraces for extensity.⁶⁸ Its overall structure was modeled on the concept of an eggshell, which Kiesler argued was the most “exquisite example we know of utmost resistance to *outer* and *inner* stress with a minimum of strength.”⁶⁹ Kiesler designed his Space House as one viable protective skin that could provide shelter, enclosure, and floor without conflict of interaction or use

⁶³ Ibid. 18, 20. Freud described the bodily ego as the “cortical homunculus”.

⁶⁴ Although not directly related to Kiesler's Space House, but in further support of a relationship between Kiesler's designs and Freud's theories on the Ego and the Id, Karl Sierek and Barbara Lasák recently describe in *Der Analytiker im Kino*, that the Space Stage actually served as the organizing principle for Dr. Sigfried Bernfeld's film project that attempted to illustrate Freud's 1923 theories of the Ego and the Id. Bernfeld's reference to Kiesler's Space Stage is characterized by an attempt to diagram Freud's convoluted matrix of these psychical constructs that function within the projected surface of a perceiving mind. See Karl Sierek, *Der Analytiker im Kino: Siegfried Bernfeld, Psychoanalyse, Filmtheorie* (Frankfurt: Sroemfeld, 2000).

⁶⁵ Kiesler, *Magic Architecture: The Story of Human Housing*, most complete version, Part 2, Chapter 4, pg. 1; Part 2, Chapter 4, pg. 5 (see chap. 4, n. 1; hereafter cited in the text MA, text references are to part; chapter; page(s)).

⁶⁶ Kiesler, “Architectural Solution,” 1933, 2.

⁶⁷ Ibid; emphasis in original.

⁶⁸ Ibid; see also Kiesler, Notes on Architecture: The Space House—Draft, 1933, 2.

⁶⁹ Kiesler, “Notes on Architecture: The Space House,” 296; italics added.

between parts. Continuous tension shell structures do not have joints that are subject to dis-joint. Instead, their elastic nature and cellular structure resist fracture and decay.

Kiesler was well aware however, the technology to construct his shell was still not available—"There is no question: a new construction method has not yet been reached. We are in transition," he said, "from conglomeration to simplification."⁷⁰ Kiesler aimed to construct architecture organically in contradistinction to techniques used to build the modern box. He rejected machine fastened panel and frame construction represented by the work of Mies and Le Corbusier, and he wildly departed from the International Style with his spheroid eggshell structures and palpable-tactile interiors that stimulated psychical experiences. In support of biomimetic structures, Kiesler envisioned elastic spaces held together through continuity to provided shelter, enclosure and floor without conflict of interaction or use between parts. In light of recent advances in building technology, Kiesler proposed to build the Space House of poured monolithic concrete with steel reinforcement.⁷¹ Ideally held-up in tension, the Space House would not require structural columns or joints, but would instead support endless spatial continuity within a unified building structure that modulated to the fluid bodily parameters of *alloplastic* systems.

Through architecture, Kiesler hoped to eliminate all joints. Joints Kiesler argued were dangerous due to their susceptibility to decay and dis-joint. Architecture historically governed by the need to assemble forms with joints is inevitably subject to eventual disjoint and decay. Understood in this light, all architecture, if not all manufactured forms, produced from an idea

⁷⁰ Ibid. 295. "There is no question: a new construction method has not yet been reached. We are in transition from conglomeration to simplification. Next simplified method of building: the dye cast unit...a continuous unit overcoming the four-fold division of column, roof, floor, wall. Such construction I call shell-monolith. ...Separation into floor, walls, roof columns, is eliminated. The floor continues into the wall...the wall continues into the roof, the roof into the wall, the wall into the floor. It might be called: conversion of compression into continuous tension." See Kiesler, "Notes on Architecture: The Space House," 27-28.

⁷¹ In an unpublished "Construction Outline," Kiesler listed a series of pragmatic solutions to the construction. Foundations would have walls 12 inches thick, built over a continuous two feet by four feet footing below grade. The structure above would be 8" thick with steel reinforcement to take temperature stresses with 1/4" diameter bars 24" on center. Walls and ceiling would be furred out to receive wire lath, plaster, or plywood paneling over 1" celotex insulation. Windows were of continuous steel with sliding glass panels. The exterior would be natural concrete finish with exposed aggregate, exterior floors tiled, and the roofs covered in "Barret 5 ply roofing". Tiled bathrooms, linoleum living room floors, and diagonal redwood bedroom flooring completed the modern look. Frederick Kiesler, "Construction Outline," 1934, Unpublished miscellaneous sketches, notes, and drafts, Space House Folder, Kiesler Archive, Vienna.

framed in the minds' eye that manifests the patterns, the draughts, the cuts to construct all artifice out of materials, is shaped alongside the ultimate fear of decomposition—losing a digit. The Space House with its aim of continuity formed in reaction to this ultimate fear.

The first digit removed as Freud had suggested is the feces that a child either offers or denies, as a gift to his love, which Freud proposed as the basis of all art and architecture through drawing, inscribing, and joining matter. In Kiesler's ideal Universe where animate and inanimate, subjects and objects, fused together in continuity without division, there would be no more joints. This ideal world would ensure prenatal hygiene and mental stability for all humanity, as there would no longer be a repetitive need for doubling forms to stave against mortality. In the ideal world of *informe*, there would be no joints, no feces, no separation anxiety, no need for cleanliness, and certainly no Freudian castration fears.

Raumseele (Space Soul)

To derive continuous connections that would best protect against human fears—fear of separation, fear of losing a loved one, and even the fear of being born—Kiesler looked to Nature. In hope to reconstitute unity, and relieve human anxiety, Kiesler responded as an *architect* to create mental and physical health through the art of construction. When asked by *Time* magazine why he became an architect—as retold by his second wife Lillian—Kiesler had invoked his favorite story of his beloved Chestnut tree:

When Kiesler was eighteen months old there was a nursemaid-housekeeper and one day each week she would knead dough to make bread. One warm spring day, she took the dough into the garden and kneaded it under his beloved chestnut tree. He said she wore full skirts and he didn't know why, but he went under her skirt and took some matches which he lit to look up, and that's how he started being an architect.⁷²

Whether remotely true, Kiesler and Lillian elicited human sexuality to describe the formative desire to produce architecture. As his nursemaid prepared nourishment in the shadow of his beloved tree, Kiesler fantasized he went under the skirt of a woman who substituted for his mother with all the eroticism associated with a fertile flame taken to light his passage.

⁷² Lillian Kiesler, "Kiesler Observed by Lillian Kiesler," *Frederick Kiesler: Arte Architettura Ambiente*, ed. Maria Bottero (Milano: L Electra, 1996) 208.

Embarrassingly, sex for Kiesler was the very nature of what it meant to be an architect.

Architecture proved for Kiesler a libidinal act of social engagement.

Kiesler's 1930 story titled "Chestnut" was a fragmented memory that Freud might suggest reenacted his primal scene, marking Kiesler for life. Kiesler's fantasy anticipated his fascination with primordial unity, automatism, environmentalism, and even his studies of plant and animal morphology. As Kiesler recalled,

from my earliest childhood on, one picture pursued me constantly. And I can still see it today very clearly, before my eyes. This vision was an obsession with me...Perhaps it had something to do with the big chestnut trees that stood in our backyard and under those shadows I played all summer long. I was very much attached to them, and often I would pick up the big fallen leaves, sit down quietly and take their structural affiliations apart and be delighted by the mystery of their intricacies.⁷³

The big trees in the back yard under whose shadow he played gave Kiesler a certain sense of security and interest. Similar to many children, Kiesler was attracted to them despite almost sadistically ripping apart their leaves. Kiesler expressed his curiosity for veined structures and skin like organic forms important to his later study on Duchamp's Big Glass. What was to strike Kiesler most in telling his story however, was that one day the gardener came over to speak with his nursemaid, who was kneading dough on the rear porch while watching over young Kiesler.

The gardener,

drove a nail into the big trunk of the chestnut tree, because it was very convenient for him to hang his straw hat there. When he went away, I lifted the straw hat off and looked at the spot where the nail was driven in the trunk. I saw that the body of the tree was hurt, that light fluid gathered around the hole, but that that clash of forces was not considered as something abnormal or prohibited, but rather as a matter of routine. If, so I said to myself, such a thing happened to the body of a human being, there would be violent reactions taking place, both audible and visible; but no one paid any attention to the clash of dead wood and dead steel. It was commonplace. (C 21)

Concerned with the wound inflicted by a nail driven into the big trunk of his chestnut tree, Kiesler understood the magnitude of routine loss caused by aggressive violence. He was angry that the gardener showed no empathy for the silent tree's pain. As Kiesler declared, "constantly after this event I wanted to design pictures where I had brought my beloved chestnut tree to life and had enlarged the very minute particles of the wood of its trunk to rebel against the intrusion of that

⁷³ Frederick Kiesler, "Chestnut," *Frederick J. Kiesler: Selected Writings*, e.d. Siegfried Gohr and Gunda Luyken (Stuttgart: Verlag Gerd Hatje, Ostfildern, 1996) 21 (hereafter cited in text as C)

steel bar.” (C, 21) Similar to Freud’s diagram of the Ego and Id, where *repression* is marked as if a nail had punctured the shell of the mind, Kiesler posed to design images that could “rebel against the intrusion” and bring his “beloved” tree back to life.

For Kiesler, art and architecture could alleviate repression that formed through acts of aggression. He felt the tree was alive with feeling and that the steel was an intruder, which he should engage in battle. (C, 21) It was the “inanimate chunk of form, the very villain in that drama.... Again and again that vision appeared in my dreams;” (C 21) “it constantly crowded itself during my days behavior into my consciousness.... The relationship between *animate and inanimate matter* absorbed me,” Kiesler explained. (C 22) The relationship between the animate and the inanimate became his obsession. In response to his concern, Kiesler manufactured a woodcut named “*Raumseele*” (space-soul) that featured,

a man seated with closed eyes, his hands and feet immovable, as though in a state of petrification. From him into the background of this picture extended a landscape and the extension continued into the sky, and the sky bent above his head, then backwards into the foreground, into the earth again, and forward toward his seat. It was evident from this picture and from the title given to it, that the man was conscious of his interrelationship with his environment, although not seeing it or actually touching it. (C 22)

From this calm, silent state, with his eyes closed and immobile, almost in meditative state of Nirvana, asleep or as here described—turned to stone, *Raumseele* (space-soul) as a work of art came to life as a psyche-real state through the act of artistic sublimation. It was born from fear of aggression against a loved object, and took the form of an image of a man accessing soul-space through projected connection otherwise unseen or felt.

Kiesler believed man was “conscious of his interrelationship with his environment” through a *space* which was the *soul* that extended out into the landscape and sky and then back to his *place* on earth. (C 22) The space of the soul related all things, inanimate and animate; it expanded out to the cosmos and contracted back to earth. Environmentalism as Kiesler derived through psychoanalytic perspective, hoped to heal the divide between “Man and Nature”—to perform a necessary unity.⁷⁴ As an environmentalist hoping to protect “Mother Earth” from the

⁷⁴ Although not a direct reference and an altogether varying point of view, Gregory Bateson evokes very similar environmentally conscious themes to Kiesler with Bateson’s strong emphasis on unity, ecology, psychoanalysis, and evolutionary theory. See Gregory Bateson, *Steps to an*

impact of thoughtless human acts of aggression, Kiesler proposed an ecological theory of the Universe that might relieve modern society of its repressed anxiety. Through the defining act of *Architecture*—a form of therapy in the libidinal world—Kiesler hoped to bring the mind, body, and soul back into balance in continuity with surrounding nature.

Kiesler presented an *animist* concept of *soul space* that hoped to heal the split between the animate and inanimate, subjects and objects—people and their environment. Kiesler envisioned space—whether best represented by the natural sciences as nuclear, magnetic, or electrical forces, or through psychical entities of cathexis, affects, or spirits to connect all things conscious, unconscious, alive or dead. Space for Kiesler was an architectural construct that resolved subject and object relations while at the same time warded against humanity's greatest mortal fear—inevitable death.

Raumseele is the space created by “architecture [that] seems to be the plastic (spatial) link between the here and the beyond, between the tangible and intangible,” Kiesler explained. (MA 1; 5; 3) Architectural space for Kiesler linked life and death. Kiesler understood “the beginnings of architecture are strangely enough not connected with life necessities, but with death.” (MA 1; 5; 1) “Architecture [connects] with death,” and “the anxiety of explaining to himself the process of death leads...even today [one] to believe in immortality,” he observed. (MA 1; 5; 3 and 1; 3; 2) For the modern architect of the 20th century, not only was architecture consequent of a fear of death (Loos' theory of the *tomb*) but so was the desire to modulate space in continuity (Kiesler's idea of *soul space*).⁷⁵

The idea of the *soul* as understood according to Rank at this time in 1930 was a manifestation of the desire for immortality whether represented as spirit, the unconscious, or as a reality in itself. For Rank, the very concept of a *soul* posed there was a connection that guaranteed from within all states of being including death that humanity existed and related in collective space somehow—somewhere—outside or beyond conscious sense, time, and

Ecology of Mind (Chicago: University of Chicago Press, 1972); see also Gregory Bateson, *Mind and Nature: A Necessary Unity: Advances in Systems Theory, Complexity, and the Human Sciences*. (Cresskill, New Jersey: Hampton Press, 1979)

⁷⁵ For Loos on the tomb see: Loos, “Architecture,” 104-109. See also Hubert Damisch, “Toward a Tomb for Adolf Loos”, *Grey Room 01* (Fall 2000).

mortality. In historic myth and religion, Rank argued in *Psychology and the Soul* that the totem is the embodiment of the immortal collective ancestor soul preserved through procreation, while dreams are the “proof” that there is an individual soul beyond the body that locates subjectivity externally and eternally.⁷⁶ For Rank, the work of Freud first associated the soul with the unconscious as the expression of our “inner life” for psychoanalytic purposes of self-knowledge and knowledge of the “other.” (PS 5, 7-8) Through psychoanalysis, we heal our soul. Ultimately, the “Psyche” became associated with the maternal as “woman represented the soul,” Rank explained. (PS 19) “This is the meaning of Psyche, the later conscious representation of the feminine soul, and patron saint of our science, which was named for her,” he concluded. (PS 19) For similar to the primitives, women represented and guaranteed the immortal soul Rank described by “animating children while keeping her own soul,” women were understood to be the “Soul Bearer”. (PS 19) The maternal body represented the very potential for birth of the next generation, effectively seen as a *soul space*, at least in historic logo-centric myth.

Not surprisingly for Kiesler, *Raumseele* (space-soul) would be associated with the maternal for generation and re-generation of mind, body, and soul through inhabitation of the house to recreate the *aura* of the maternal body. As Kiesler recognized in the 1940s when writing his chapter “Enigma of Birth”, in *Magic Architecture*, “man...finds a strange attraction for the locality of birth,” and “this locality may be called the psychological shelter of man.” (MA 1; 4; 1) Similar to Rank and Freud, Kiesler associated psychological shelter with the maternal body. For as Kiesler explained,

the place of birth carries with it the memory of the sheltering love of the mother, and the matriarchate is then the first form of social contract. Whatever evolution man has gone through, the attraction to the place of birth and to the actual house and home remains the same. Exactly like the animals, he is drawn to return home no matter how far away the search for the necessities of existence may have carried him. It is well established that animals, which have been carried away from their place of birth will find their way back with an *uncanny* sureness. (MA 1; 4; 1-2)

⁷⁶ Otto Rank, *Seelenglaube und Psychologie* (Wien: Franz Deuticke, 1930); English translation, *Psychology and the Soul: A Study of the Origin, Conceptual Evolution, and Nature of the Soul*, tr. Gregory C. Richter and E. James Liberman (Baltimore: John Hopkins University Press, 1998), 16, 28 (hereafter cited in text as PS).

Kiesler was aware of the *uncanny* desire for animals, including humans, to return naturally home to the sheltering love of their mother. For someone like Kiesler who did not have a mother to return it is perhaps easy to suggest he hoped to reconstitute that love through architecture.

Although an easy criticism of Kiesler is to suggest, he had an *uncanny* wish fulfillment to return to the maternal body himself—a fear and flight-reflex to return to the womb, one has to recognize Kiesler was well aware of the Freudian and Rankian implications of his architectural research. Not altogether different from the surrealists, Kiesler studied Freudian texts and similar psychoanalytic resources to problematize, enact, and potentially work through historic and contemporary enigmas of modern society.⁷⁷ If it is true as Demos suggests that Kiesler had an *uncanny* desire to achieve pre-linguistic unity by invoking fusion between vision and reality in his 1940s surrealist gallery spaces, we have to account for Kiesler’s instrumentalization of psychoanalysis in his architecture practice. If Kiesler simulated the *aura* of the primal maternal relationship in his surrealist galleries, he did so to *work through* modern trauma and repressed wish fantasies in hope to arrive at what he believed a more critically engaging and ethically conscious building practice. Kiesler’s architecture *enacted* modern myths in his attempt to reconstitute *auratic* relationships associated with the maternal *soul space*, but not necessarily out of fear for his life.

For Benjamin, aura comprised a breathy ornamental halo that encased an inanimate object whose exact figure could be “read off” through the art of imaginative interpretation.⁷⁸ The halo that encased the object physically and psychically embodied traces of memory inscribed through acts of dwelling that gave an object sonic voice. Benjamin’s surrealist project endeavored to liberate the *physis* and *psyche*—the body and image space surrounding all things for political revolution. To this purpose, he idealistically sought to end “the cult of dwelling” by “reading off”

⁷⁷ See Chapters 3 and 4 for an evolution of Kiesler’s interest in psychoanalysis.

⁷⁸ Benjamin first observed aura on Hashish. Aura, he observed constituted a sense of space that surrounded the body, which could be “wounded”. Aura was quite personal for Benjamin, and formed through anticipation of a violent bodily intrusion—his friend Ernst Bloch reaching into his personal space. Aura for Benjamin, formed as a protective zone or atmosphere aroused in the psyche in response to anxiety of physical trauma. But as he later concluded in “Some Motifs on Bauderlaire,” aura was not limited to acts of physical aggression. Walter Benjamin, “My Second Impression of Hashish,” in *Walter Benjamin: Selected Writings Volume II: 1927-1934*, ed. Michael W. Jennings (Cambridge: Harvard University Press, 1999) 88.

auratic traces.⁷⁹ Kiesler on the other hand wanted to dwell in the most primal of all auratic spaces—the image of the abode of the maternal being.

Kiesler's 1940s galleries were the idealizations of the confines of his continuous embryonic eggshell structures designed to recreate the sensual environment of continuity with the mother. As he often sketched, Kiesler intended these galleries to be the interior of his egg shaped spaces that encased surreal habitation within a spheroid-matrix shell. Kiesler's was obsessed with spherical spaces since the formation of his 1924 Endless Theater project—even though he struggled to build spherical forms. When he could not build the 1933 Space House as a continuous egg shell structure for example, he drew it to appear as an egg anyway. [Fig. 5.22] He also drew the interior of his 1942 Surrealist Gallery as if it were an egg, and he painted his egg as the culminating figure of his 1947 Blood Flames Surrealist Gallery. [Fig. 5.23, Fig. 5.24, Fig. 5.25] In his 1947 Halls of Superstition, he perhaps most innovatively wrapped the entire gallery within a mobius strip—an endless strip—to form the space of his egg shaped shell. [Fig. 5.26] Kiesler's creative project derived in the struggle to build spherical forms that created endless spaces to dwell.

The Endless House

Kiesler began his design for the Endless House while completing the Halls of Superstition exhibition in Paris after the war in 1947. Kiesler produced a series of sketches that formed sinuous enclosures and cavernous spaces of varied house-like conditions. [Fig. 5.27, Fig. 5.28] Only one elementary drawing however constituted an actual egg; the majority appeared as a series of angular solids in which he carved out interior spaces and applied shadows to emphasize solid presence and a ground plane. [Fig. 5.29] Kiesler designed the Paris Endless from a solid, or germ cell of a rock or egg, and then stretched out areas to constitute spaces from the original mass. In these carved and stretched-out forms, he created orifices and protrusions that constituted potential skylights, doors, and windows. [Fig. 5.30] In addition, he cut sections from

⁷⁹ Walter Benjamin, "The Return of the Flâneur," in *Walter Benjamin: Selected Writings Volume II: 1927-1934*, ed. Michael W. Jennings (Cambridge: Harvard University Press, 1999) 264.

loosely sketched axonometric drawings that revealed confining interior spaces with potential stair configurations. [Fig. 5.31] Kiesler's Paris Endless incorporated bodily growths and unnerving appendages with estranged primitive structures.

Not altogether different from Le Corbusier's Ubu sculptures and poetic rock formations Le Corbusier associated with the very essential acts of place-making in his *New World of Space*, 1948—Kiesler began evoking primitivist fantasies in his architecture to inform his housing designs.⁸⁰ Kiesler looked primarily to pre-historic cultures and the structures of animal shelters to re-naturalize modern building practice. Kiesler's *uncanny* regression into primitivism highly influenced his study of *Magic Architecture* and subsequently his Endless House designs.

Through his research Kiesler maintained that *protection* was the primary concern of all shelter design as it was for all animal dwelling since primitive times. "Man's house-building is nothing else but Animal-Architecture" he explained; "its function is physical protection" through "nest-building". (MA 2; 2; 2) For Kiesler, "the talent for building is...nothing else but the extended gesture of defense of the animal-psyche: protection against attack and death; preservation of food, shielding the weakened sick," and so on. (MA 2; 2; 1-2) The house existed fundamentally for the safety it provided and for Kiesler, "no better illustration of the house as a shield for physical protection can be found in the homes of the termites."⁸¹ [Fig. 5.32] For Kiesler, termites produced the safest forms of shelters and so he looked very carefully at the manner termites constructed in drone-like fashion arches and shelters from grains of sand with grass reinforcement. (MA 2; 2; 2) [Fig. 5.33] Termites he observed instinctively build in mounds primarily through cellular chambers that envelop the queen and her nursery.⁸² [Fig. 5.34] Similar to the white ant—the termite—who constructs towering mounds like skyscrapers, Kieser proposed humanity must *instinctively* build the same:

It is now clear that the instinctive ability of ... man in general to build and to wear clothing has a dual root: a physiological as well as a psychological one: Physiologically arbitrary reflex motions of the body are in time, mechanized and

⁸⁰ See Le Corbusier, *New World of Space* (New York: Reynal & Hitchcock, 1948).

⁸¹ (MA 2, 2, 1) See also excerpt text and images published in "Frederick Kiesler: Magic Architecture, 1940s," *Friedrich Kiesler: Endless House*, ed. Österreichische Friedrich und Lillian Kiesler-Privatstiftung and MMK—Museum für Moderne Kunst Frankfurt am Main (Ostfildern-Ruit, Germany: Hatje Cantz Verlag, 16-17).

⁸² "Frederick Kiesler: Magic Architecture, 1940s," 16.

standardized through our nervous system. Psychologically all animals, and especially man, living collectively, invariably learn by imitating. (MA 2; 1; 3)

To design as nature, humanity Kiesler proposed should build autonomically—trained through imitation of reflex action built-up in our nervous system habitually over time—like termites.

Recalling James' automatist theories, Kiesler studied the instinctive construction and cellular building patterns of animals, to imitate more innate building practices and thereby construct more environmentally sensitive modern shelters.

Caves, nests, and stones were the basic elements he concluded that architects should mimic. Caves, not surprisingly for Kiesler represented the innermost cell and first natural shelter for all humanity, while the nest proved the first artificial building. [Fig. 5.35] In piling stones, humans could imitate the space of sheltering caves as a continuous arch of rocks.⁸³ Studying nests similar to the Orangutan, Kiesler observed how shelters could "retain elasticity" so that their structure more "easily accommodates the movement of the body which they protect." (MA 1; 7; 3) From his research, Kiesler asserted cellular mounds, rock formations and flexible building structures were the fundamental building blocks that create natural shelter designs. *Magic Architecture* was Kiesler's historic proof that both justified and informed his interest in elastic architecture practices.

Kiesler's 1947 Paris Endless was his first response alongside the Halls of Superstition exhibition to these natural history studies. The final version of the house emerged from a series of rock like formations, with cellular spaces that performed to create a cohesive structure within an elastic skin. [Fig. 5.36] The Endless House supposed a mass that Kiesler stretched, pulled, and modulated about a delineated circulatory path to form one organic system. Derived through the cavernous shaping of rocks, Kiesler lifted the Endless House off the ground at different locations. In the final version, it had punctures through its skin on appendages and on top the main body of the house. These openings showed lines exuding dynamic forces between interior and exterior spaces. The whole body of the Endless House undulated to the contracting and expanding rhythms in release of what appeared to be dynamic energy forces. Besides its primitive qualities, Kiesler's 1947 Paris Endless had an especially erotic disposition.

⁸³ "Frederick Kiesler: Magic Architecture, 1940s," 19-21.

Both the visual and verbal descriptions of Kiesler's houses ultimately resonated with his extensive interest in Wilhelm Reich's writings on Orgasm Theory. Kiesler had seen Reich's lectures in New York at the New School for Social Research between 1939 and 1941 and held several of Reich's books in his library including *Die Bione*, 1938, *Listen, Little Man*, 1948, *An Introduction to Orgonomy*, 1960 and *Wilhelm Reich, Selected Writings*, 1961.⁸⁴ Reich's work sustained Kiesler's interest throughout his entire study of the Endless House from the 1940s through the 1960s.

Similar to Kiesler, Reich researched human physiology and psychology to propose a "functional unity" between the "balance of forces" between the tension and relaxation—contraction and expansion—of the *psychic* and the *somatic* systems of the body.⁸⁵ Reich's theories of course all pertained to sexuality. Reich proposed an analogy between the physical and psychological structures of the body, the sexual organs, and the urinary system. Similar to the bladder, the body—as the sex organs—build-up forces between internal pressure and surface tension—expanding and contracting—in search of release.⁸⁶ Referencing Freud's theory of the drives, Reich associated sex with the psychological entities of pleasure and pain. Expansion of the physical body represented for Reich pleasure and joy "outside the self—toward the world," and contraction represented sorrow and pain "away from the world—back into the self."⁸⁷ Very similar

⁸⁴ See Lillian Kiesler, "Personal Library of Frederick Kiesler," 112, 113, 115, 116. See also Steffi Kiesler Diary.

⁸⁵ William Reich, *Selected Writings: An Introduction to Orgonomy* (New York: Farrar, Straus and Cudahy, 1960) 116-117. Reich compiled his essays into this one complete edited book, which included varied texts originally published from 1942 on by Orgone Institute Press.

⁸⁶ For Reich, and I suspect Kiesler, "all biological impulses and sensations can be reduced to the fundamental functions of *expansion* (elongation, dilation) and *contraction* (constriction)." Reich directly studied their relationship to the "*autonomic nervous system*". For Reich the parasympathetic system equated with expansion, elongation, hyperemia, turgor and pleasure, while the sympathetic functioned wherever the organism contracts and withdraws blood from the periphery—"where it shows palor, *anxiety* or *pain*". He of course related these to the enlargement of the sex organs. See Reich, *Selected Writings*, 136. In addition, he correlated this same process to cellular division and growth. As a cell is fertilized for example Reich argued it first becomes "*tensed*", internal pressure and surface tension increase simultaneously. As the "egg cell" is elastic, through a process "characteristic of the function of living substance: *the stretching results in contraction*." "The nucleus begins to 'radiate,' i.e., to produce energy." Through observing Bion cultures "at a certain point the membrane begins to contract" at the point of maximal tension resulting in a visible vibrating, undulation and contracting. "If the cell could talk it would express *anxiety*" Reich insisted—division occurs which "*corresponds to a process of relaxation*." Reich, *Selected Writings*, 133.

⁸⁷ Reich, *Selected Writings*, 136

to Kiesler, he deduced “Life process” takes “place in the constant alternation of expansion and contraction.”⁸⁸ “Sexuality” he deduced was nothing other than “*the biological function of expansion* (“out of the self”)...[and] *anxiety*...(back into the self).”⁸⁹ On an instinctual level, “expansion and contraction function as sexual excitation and anxiety, respectively” Reich surmised.⁹⁰

Reich not surprisingly deduced that the process of reaching orgasm was instinctual, and had natural benefits for both the human *physis* and *psyche*. As Reich observed during the act of sex, a balanced organism reaches a convulsive state of “autonomic innervation” not altogether different from the act of breathing. “Life process” he observed, “in especial respiration, can thus be understood as a constant state of pulsation in which the organism continues to alternate, pendulum-like, between parasympathetic expansion (expiration) and sympathetic contraction (inspiration).”⁹¹ Like the “rhythmic behavior of an ameba, a medusa, or heart” the body releases pressures autonomically through sexual orgasm. For Reich—sex had nothing to do with love—but *pelvic anxiety* that built up towards release. “*The elimination of sexual stasis through orgasmic discharge eliminate[ed]...every neurotic manifestation*” he believed.⁹² In the compulsive act of sex, associated with a natural release of aggression, the body achieved if momentarily therapeutic benefit from achieving orgasmic fusion with another human being.⁹³ Through the orgasm, one gives themselves over fully, autonomically, if involuntarily to the benefit of being fused momentarily with internal and external atmospheric energy—what Reich described as the aura of “Comic Orgone Energy”.⁹⁴

Similar to Reich, Kiesler hoped to instrumentalize the automatisms of everyday life, to simulate a state of auratic communication of deep release with the cosmos. If Kiesler’s house

⁸⁸ Ibid.

⁸⁹ Ibid. 117-118. Reich compared sexuality and anxiety of the “orgasm formula: tension—charge—discharge—relaxation” to be the same “life formula” between “Pleasure (Expansion) and Anxiety (Contraction).

⁹⁰ Ibid. 137.

⁹¹ Ibid. 142.

⁹² Ibid. 189; emphasis in original.

⁹³ Ibid. 190. For Reich the need for gratification--“*for the discharge of the surplus energy in the organism by way of fusion with another organs*—makes itself felt at more or less regular intervals;” emphasis in original.

⁹⁴ Ibid. 5, 216.

posed a relationship to Reich's theories on the benefits of sexual orgasms, the Endless House enacted one of its most primal expressions. It performed as a bodily supplement—a prophylactic sex device—to release pent-up frustrations. If Loos' modern house hoped to build-up bodily armor on the exterior by repressing sensual pleasure on the interior—Kiesler hoped to release modernism's repression through architecture of sexual liberation. Within the contracting and expanding apertures of surreal dwelling, like a sex doll, the Endless House conformed to the body to enact modern pleasure in the hope to release repressed pain.

1950 Endless

When he returned to New York from Paris in 1947, Kiesler had few design projects waiting for him. But as the post war years incited an enormous modern housing boom across the country, Kiesler believed his research ever more dire and necessary. In 1946, Kiesler had written a proposal to re-open his Design-Correlation Laboratory that he sent in 1948 to the University of Michigan. Arguing his point, he asserted there was an "URGENT NEED" after the war, "when all those interested either by profession or speculation plunge into housing-design, with studies of necessarily limited scope".⁹⁵ To counteract "this rush with investigations independent of immediate application and sales," Kiesler proposed his housing studies as a more appropriate response.⁹⁶ The Endless House ideally posed to relieve trauma and anxiety of a post-war generation, but there was no immediate interest in Kiesler's particular research.

Kiesler's first break, in the postwar years was through his publication "Manifeste du Corréalisme" in *L'architecture d'aujourd'hui* in 1949. Kiesler presented his most significant housing and design projects alongside familiar ideas from "On Correalism and Biotechnique," and "Magic Architecture".⁹⁷ Upon recommendation by Lewis Mumford, Kiesler showed a more

⁹⁵ See Frederick Kiesler, "The Laboratory of Design-Correlation," New York City, March 21st, 1946, unpublished, 2, Laboratory for Design Correlation, REC 03 Box, Activities/Reports, Reports on the Laboratory for Design Correlation Folder Kiesler Archive, Vienna. See also Frederick Kiesler to Holm, November 27, 1948, Frederick Kiesler Papers, Box 4 of 7, Correspondence 1949 Folder, Smithsonian American Archives of Art, Washington D.C.

⁹⁶ Ibid.

⁹⁷ Frederick Kiesler, "Manifeste du corréalisme," *Arts plastiques 2e numéro hors-série de L'Architecture d'aujourd'hui consacré aux arts plastiques* (Boulogne, *Architecture d'aujourd'hui*, 1949)

complete version of the text to McGraw-Hill hoping to publish under the title *Towards a Union of Art and Architecture*.⁹⁸ The manuscript also included his recent article “Pseudo-Functionalism in Modern Architecture” published in *Parisian Review*.⁹⁹ Interest in Kiesler’s work gained momentum that year, as he presented lectures at Harvard University, University of Michigan, Columbia University, and the Institute of Design in Chicago.¹⁰⁰ By June 1949, Kiesler met for the first time with Director of the Museum Collections, Alfred Barr of the MoMA.¹⁰¹ Upon recommendation from Philip Johnson who had begun to prove a “staunch supporter and ally” for Kiesler—he was invited to hold a Design Seminar group, “a sort of School for Designers” at the MoMA planned for sometime the following year.¹⁰²

In June 1950, Kiesler’s friend Hare invited him to participate in a collaborative group show, “The Muralists and Modern Architecture” at the Kootz Gallery, New York. Kiesler felt he had been “put amusingly on the spot” in light of the “type of architect which we will probably encounter”—namely Johnson, Gropius, and Breuer who were all directly invited to participate in the show.¹⁰³ Kiesler felt an outsider to this group, as reminded by the circuitous route he received his invitation.

⁹⁸ See letter Frederick Kiesler to William Larned, July 9, 1949, Frederick Kiesler Papers, Box 4 of 7, Correspondence 1949 Folder, Smithsonian American Archives of Art, Washington D.C.

⁹⁹ *Ibid.* During this time, Kiesler also applied for a Fulbright grant to study the integration of Art and Architecture in 18th century France. He was particularly interested in the Baroque and Rococo styles. See letter Frederick Kiesler to Gordon T. Bowles, November 28, 1949, Frederick Kiesler Papers, Box 4 of 7, Correspondence 1949 Folder, Smithsonian American Archives of Art, Washington D.C.

¹⁰⁰ See letters Frederick Kiesler Papers, Box 4 of 7, Correspondence 1949 Folder, Smithsonian American Archives of Art, Washington D.C.

¹⁰¹ See letter Frederick Kiesler to Alfred Barr, May 14, 1949; Alfred Barr to Frederick Kiesler, June 1, 1949, Frederick Kiesler Papers, Box 4 of 7, Correspondence 1949 Folder, Smithsonian American Archives of Art, Washington D.C.

¹⁰² See letter William Poliner to Frederick Kiesler, October 23, 1949. Johnson and Kiesler had a strong friendship after 1950, which included the exchange of many letters. Kiesler generously built Johnson an outdoor Galaxy sculpture for his garden in New Canaan, Connecticut in 1953 which Barr and he both felt was “a new art form of surpassing nature”. See letters from Johnson to Kiesler, June 8, 1953; Kiesler to Philip, September 14, 1952; Richard Kelly to Frederick Kiesler, February 14, 1953; Kiesler to E.M. Benson, April 25, 1953; and Philip Johnson to Frederick Kiesler, June 8, 1953, Frederick Kiesler Papers, Box 4 of 7, Correspondence 1949 Folder, Smithsonian American Archives of Art, Washington D.C. See also letters between Frederick Kiesler and Philip Johnson from 1951 to 1955, Briefe J, Mappe 4, Kiesler Archive, Vienna.

¹⁰³ See letter Frederick Kiesler to David Hare, June 28, 1950, Frederick Kiesler Papers, Box 4 of 7, Correspondence 1949 Folder, Smithsonian American Archives of Art, Washington D.C.

For the exhibition, Kiesler designed a 9" diameter scaled-model in clay of a new version of his Endless House. Perhaps too insecure to expose the overt sexuality of his 1947 Paris Endless, Kiesler proposed instead his ideal solid egg-shaped structure for this design. [Fig. 5.37] Hare and Kiesler collaborated similarly to their 1947 Halls of Superstition exhibition. Hare produced an interior sculpture to be surrounded by Kiesler's curvilinear shells. To fit his sculpture, Hare produced a large egg shaped structure based on Kiesler's smaller model, but as it proved too strange, they exhibited only Kiesler's small clay model and a fragment of the larger shell.

Presented in October, Kiesler's design was remarkably well received. In many ways, the exhibition proved a breakthrough that launched Kiesler as a significant figure in the history of modern architecture. Director of the Department of Architecture and Design at the MoMA, Arthur Drexler published Kiesler's project in *Interiors Magazine* in 1950 alongside an elaborate description of the work.¹⁰⁴ [Fig. 5.38] Johnson acquired the Endless House for MoMA in 1951 and showed it again at Drexler's "Two Houses: New Ways to Build" exhibition alongside Fuller's Geodesic Dome in 1952. *Life* and *Time* magazine featured Kiesler's Endless House in May and October of 1952, and soon after Kiesler became somewhat a celebrity to a wider audience of educators, architects, and critics.

If an altogether speculative clay model—Kiesler's Endless House successfully incorporated years of his design interests. Similar to the Space House, Kiesler generated its form in response to varied social dynamics, and proposed the Endless House be for extended family living; it brought two or three generations together under one roof. [Fig. 5.39] Different room sizes correlated to varied activity levels. Where "generous spaces preferable for group living demand double or even triple heights in such areas as the living room," Kiesler explained, "minimal 8-foot heights are best in bedrooms and other private areas," he observed. (EHI 125) [Fig. 5.40] The plan revealed three "individual recreation and sleeping areas," with minimal windows for daylight, a soundproof study, and a children's playground and workshop. All rooms were located off a central group-living-eating-area and separated by thick *Poché* space with doors as flexible

¹⁰⁴ Frederick Kiesler, "Frederick Kiesler's Endless House and its psychological lighting," *Interiors*, November 1950, 122-129 (hereafter cited in text EHI).

screens. (EHI 124) Unlike the Space House, however the Endless House did not advance overt mechanized systems and mobile furnishings to create spatial variation, but relied heavily on multi-media lighting effects similar to his Endless Theater.

In the Endless House, Kiesler's stage effects became psychological lighting effects, which dominated the interior atmosphere. [Fig. 5.41] Kiesler delineated psychic projection through a series of colored lines that enveloped and generated from within the Endless House. Lighting "push[ed] back the physical boundaries" of architecture while at the same time surrounded the inhabitant with distracting "color and brilliance" to inspire expansive rumination secure in remote havens of rest. (EHI 125) [Fig. 5.42]

Featured during the daytime in the "Endless House" was a large crystal that filtered the sun into a prismatic kaleidoscope. It used "convex mirror reflex devices" to translate light—"to diffuse it"—into rays that transformed into a series of three colors from dusk until dawn marking the passage of daily habits in "continuity of time" and "dynamic integration with natural forces." (EHI 122) [Fig. 5.43] Kiesler introduced time into his architecture to demarcate habitation—to codify the body's actions in relation to spatial conditions. As time passed—the room systematically changed color. Daytime lighting provided periodic riotous colors whose patterns recorded the passing of daily habits—diffused on surfaces and inscribed in personal memory. [Fig. 5.44]

Nighttime lighting provided similar effect, with "exhilarating" "double-direct-indirect" lighting that reflected off woolen white carpeting and then bounced back onto the walls and ceiling—"diffused" endlessly. (EHI 126) Night lighting being theatrical and motion sensitive, moved with the inhabitant and provided variety of experiences marked by "vast succession of shadows beyond shadows." (EHI 126) Spotlights focused upon objects and habitants. Diffuse light radiated upon curvilinear walls. Kiesler transformed the habits of everyday life into the *auratic* traces of surface memory dispersed as colorful illusory affects timed to the movement of the body and rhythms of sun and moon.

Dwelling no longer left traces in the physical markings upon material surfaces of the architectural body. Instead, dwelling existed dispersed as sensational images marked through

time as phantastic illusory colors and shadows recorded in memory. Kiesler believed 20th century beings could dwell in multi-media and he designed his architecture to envelop habitation within a *casing of illusory projection*. The house formed a virtual environment that became an effervescent halo surrounding the habitant—constructed as a seemingly elusive surface of “continuous tension” eggshell construction. The Endless House performed as a complex matrix or shell that encased, prefigured, adapted, and controlled the parameters of dwelling inside its virtual elastic skin.

Similar to the Space House, Kiesler conceived his Endless House as “a shock-proof shelter”.¹⁰⁵ Its image and form presented almost identically to the rock-shaped formations of his studies of pre-historic constructions of 14th century France.¹⁰⁶ The Endless House formed through a primitivist regression, but unlike the 1947 Paris Endless, it did not exhibit perverse primal elastic expression. Its auratic continuity did not form through the pornographic image of autonomic sexual release, but through palpable luxury of warm soft glowing atmospheres of multi-media affections. Kiesler achieved endlessness through *illusions* that “sweep past the boundaries” while at the same time integrate dwelling in a thick protective shelter. (EHI 127)

Despite its innovation and celebrated reception however, Kiesler’s eggshell construction remained purely a provocation. Johnson would later declare Kiesler, “the greatest non-building architect of our time,” in respect for Kiesler’s indefatigable ambition to design innovative structures that could not be built.¹⁰⁷ Although Kiesler never stopped searching for a client to build his Endless House, no materials or structural technologies were available to construct Kiesler’s continuous eggshell forms cost-effectively. Through the 1950s however, this technology started to advance.

The 1950s saw several continuous tension shell constructions similar to Kiesler’s vision. J. M. Johansen produced similar eggshell structures for his Sprayform House in 1954, and

¹⁰⁵ See Letter Frederick Kiesler to Mr. Markel, September 14 1952, Frederick Kiesler Papers, Box 4 of 7, Correspondence 1951-1952 Folder, Smithsonian American Archives of Art, Washington D.C.

¹⁰⁶ “Frederick Kiesler: Magic Architecture, 1940s,” 19.

¹⁰⁷ Philip Johnson, “Three Architects,” *Art in America*, nr. I, March 1960, 70.

constructed in a small version in Zagabria, 1956.¹⁰⁸ Saarinen constructed the TWA terminal in steel reinforced concrete in New York from 1956 to 1962 that proved it was possible to construct wild organic structures, at least in institutional design. S. Hohauser published his egg-shaped Beach House in 1956. While MIT architects produced the first continuous tension shell plastic structure, The Monsanto House of the Future in 1957.¹⁰⁹ [Fig. 5.45] Interest in technology similar to Kiesler's vision began to prove possible.

Interest in continuous tension shell technology advanced rapidly during the post war years—especially in the plastics industry. Haskell, editorial chairman of *Architectural Forum* argued in 1954, that plastics would generate a “second ‘modern’ order...to which today’s ‘modern’ will be just an antecedent.”¹¹⁰ Haskell proposed a second form of modernism that would signal a departure from the current trend favoring the manufacture of steel frame, mechanically fastened panel construction. In favor of structures similar to Kiesler, Haskell remarked,

today's typical “order,” as Mies van der Rohe says, is the skeleton frame.... Tomorrow's structure may be typically all “skin.” Its skin may be formed to become its shell *and* its interior columns of cellular structure.... A single continuous envelope of a thin sandwich material may yield structure and enclosure; resistance to destructive forces from outside; solidity or porosity; control of light and view; insulation for heat and sound, color and finish—all characteristics we now impose separately.... Future buildings may be as thin as egg shells.¹¹¹

Continuous eggshell construction hoped to promote an alternative building typology in contradistinction to the traditionally accepted modern practice of “skin and bone” architecture. Kiesler had known Haskell since their involvement at the AUDAC, and to promote his work, Kiesler sent Haskell his “Manifeste du Corréalisme” article that featured Kiesler's Space House in 1949. “To Doug Haskell with 20 years of fighting Memories (in the U.S.A.),” Kiesler wrote in hope

¹⁰⁸ Valentina Sonzogni, *Frederick Kiesler, La Endless House come infinita ricerca dello spazio infinito*, Masters Thesis, Università di Roma “la Sapienza”, 1999, 196.

¹⁰⁹ See Stephen Phillips, “Plastics,” *Cold War Hothouses* ed. Beatriz Colomina, et. al. (New York: Princeton Architectural Press, 2004) 91-124.

¹¹⁰ Douglas Haskell, “In Architecture, Will Atomic Processes Create a New ‘Plastic’ Order?” in “Building in the Atomic Age,” *Architectural Forum*, September 1954, 100.

¹¹¹ Haskell, “In Architecture,” 100; emphasis in the original.

that his vision might one day be taken seriously. Finally, in the 1950s Kiesler's ambition was starting to break ground.¹¹²

Endless Sculpture

Kiesler broke through the shell of his egg shaped structures through a series of Endless Sculpture projects he produced around 1954. The "Endless Sculpture" titled "The Vessel of Fire", began from a series of three hollow clay shells that lay nested together "like broken eggshells."¹¹³ Originally designed for his 1950 Endless House, the shells had cracked due to faulty craftsmanship and were then cast in bronze to retain their form. "The mutation into sculpture," took place by accident Kiesler observed. He had received a Graham Foundation grant to pursue artistic work, so he began serendipitously standing one of the cast shells upright for amusement. (ES 21) The "form became more prominent than its function," he remembered, and the Endless House became a sculpture that needed a base for support. (ES 21) Using wood planks ripped to appear "utterly muscular" from "a tree trunk," he made a support for the shell; he then added two more shells to the sides as "wings," to create "breath" for the sculpture. (ES 21, 23) To support its growing weight he needed a "widespread base," and found a series of burned, charred wood planks out in the foundry, and fastened them together. [Fig. 5.46] He realized the sculpture was incomplete and he added a vessel of fire to light beneath the shells between the widespread base of its muscular tree trunk legs. (ES 24)

As he made more sketches to add more shells—more units—to achieve "continuity", Kiesler believed the endless sculpture proved "indigenous to its environment"; it "constitutes a global organism" he proposed, "in itself growing constantly from fixation to discontinuity within the will of an unlimited continuum." (ES 28) Kiesler's sculpture proved to him a series of part objects brought together in continuum that he believed breathed life. For as

¹¹² Frederick Kiesler, "Manifeste du corréalisme," *Arts plastiques 2e numéro hors-série de L'Architecture d'aujourd'hui consacré aux arts plastiques* (Boulogne, *Architecture d'aujourd'hui*, 1949); signed copy as held in the Douglas Putnam Haskell Papers, 1866-1979, Box 112, Folder 6, Misc. Frederick Kiesler, Department of Drawings and Archives, Avery Architectural and Fine Arts Library, Columbia University, New York.

¹¹³ Frederick Kiesler, "Towards an Endless Sculpture," *The 'Endless House: Inside the Endless House: Art, People and Architecture: A Journal*. (New York: Simon and Schuster, 1966), 21 (hereafter cited in text as ES).

you see, the sculptor's wings are really made of clay and his work is earthbound. It is the breathing of the intervals between details that makes his materials live and expand visually. Isn't the dimensioning of space-distances, the exactitude of intervals, the physical nothingness which links the solid parts together so powerfully—isn't this the major device for translating nature's time-space continuity into man-made objects? (ES 27)

For Kiesler, he fantasized one could translate nature's life principles of time-space continuity and make the inanimate animate, by marking space through relative distance in time. Kiesler envisioned he could connect different objects, even those broken apart through endless spatial connections— through *soul space*—that he imagined existed virtually in the intervals.

Kiesler had a consistent obsession throughout his practice to resolve subject object relations by evoking relative spatial distance to connect all things. Kiesler commingled his obsession with theories by Einstein and Minkowski on space and time. By the 1950s, his pseudo-scientific fantasies resonated with events of contemporary culture. As modern developments in “nuclear science, fission, fusion, and satellites unexpectedly rocketed everybody's imagination into outer space,” Kiesler realized, popular culture “suddenly made the Endless a natural”.¹¹⁴ Science and technology had motivated Kiesler since the 1920s, long before “the new terminology ha[d]...entered our vocabulary” he observed.¹¹⁵ Kiesler hoped to negate separation and difference between things through elaboration of *space science*. In his 1959 essay on “How Things Hold Together,” Kiesler proposed a similar theory of spatial connectivity for his “galaxial” sculpture projects.¹¹⁶ Not surprisingly, he ultimately concluded to set his sculptures to motion—to create an “indoor cosmos”—his “mobiloids” that appeared to breathe life through perception in *parallax* or electro-mechanical devices.¹¹⁷

¹¹⁴ Kiesler, “Kiesler's Pursuit of an Idea,” 114.

¹¹⁵ Ibid.

¹¹⁶ Frederick Kiesler, “How Things Hold Together,” *The 'Endless House: Inside the Endless House: Art, People and Architecture: A Journal* (New York: Simon and Schuster, 1966) 214-215.

¹¹⁷ “Of course, the next step would be to have these paintings or sculptures or sectional architecture move,” Kiesler explained in the text—“be in motion, like a human being who can lie quietly, stand fixed, but can also walk, run, jump and come back to repose. It is not difficult to imagine a magnetic wall where such objects...would move, guided by a built-in electro-magnetic force, either slowly or fast, or stop on premeditated orbits, run or move in such slow motion as the minute hand on our clock which seems, when you look at it, to stand still... Now we can easily gear this power to a minute cycle, an hour cycle, or day and night cycles, and, although the play would be premeditated and properly set...it could also have the freedom of chance movement, chance produced by the mechanism itself, or imposed by an observer, at will. These

Animated by the miracles of motion, Kiesler gave his sculptures names. His expanded wall sculpture he called “Heliose”, and his ceiling sculpture “Embryo.” “Heliose” was the daughter of the “Vessel of Fire,” that was “slender compared to the mother.”¹¹⁸ She was the regression from the mother Kiesler explained for “she stands now in my house, threefold puberty: shyness, anguish, longing. She is wrapped in snow-white cloud tissues, a heavy body of bronze inside.... We shall undress her as soon as Alice arrives to view her...the kettle is whistling. I must go and prepare my brunch.”¹¹⁹ As Kiesler prepared to undress his pubescent child for her unveiling he returned to food as he was constantly hungry, virtually starving, consistently plagued by unresolved needs and drives.¹²⁰ In the 1930s, Steffi began a diary to record major events in Kiesler’s life that almost always revolved around food, and by the 50s Kiesler elaborated his own story to be consumed *Inside the Endless House*.

Inside the Endless

Johnson and Drexler presented Kiesler with an opportunity to construct a new Endless House inside MoMA’s garden courtyard in the late 1950s. Kiesler received a \$12,000 grant from the R.H. Gottesmann Foundation in February 1958 to build the model and plans. Drexler invited Kiesler to present his plans and model at the “Visionary Architecture” show planned for the MoMA, September 1960.¹²¹ Convinced he should make a large-scale mock-up, He began to

‘mobiloids’...would create an indoor cosmos.” Through speed—setting objects in time and motion—Kiesler hoped to “create an indoor cosmos” for his “mobiloids”. Kiesler’s fantasy to animate the inanimate through an electro-magnetic power however, only begged the same question of all estranged automata since the 18th century. As in the fate of Offray de La Mettrie’s treatise *L’homme machine* (1747), the notion of quintessential *perpetuum mobile*, or self-moving machine, has always been regarded suspect. Even vitalists such as Paul-Josef Barthez ridiculed the attempt to animate inanimate objects with the miracles of “self motive power.” Kiesler tried every idea imaginable to get his designs to move, and if he could not use a mechanical device, he relied on perception of parallax do the trick. Kiesler, “How Things Hold Together,” 214-215. See also Anson Rabinbach, *The Human Motor: Energy, Fatigue, and the Origins of Modernity* (Berkeley: University of California Press, 1992) 52.

¹¹⁸ Frederick Kiesler, “Heliose,” *The ‘Endless House:’ Inside the Endless House: Art, People and Architecture: A Journal* (New York: Simon and Schuster, 1966), 231.

¹¹⁹ Kiesler, “Heliose,” 232.

¹²⁰ Colomina makes a similar observation in Beatriz Colomina, “The Medical Body in Modern Architecture,” *Anybody*, ed. Cynthia Davidson (Cambridge: MIT Press, 1997) 237-238.

¹²¹ In addition to his intention to build the Endless House, Drexler also arranged soon after to exhibit Fuller’s structures and Paul Nelson’s Suspended House design in the MoMA garden courtyard. Drexler was convinced industry would be more interested in Fuller’s design, and so

construct a new version of the Endless out of hammered bronze metal sheets. Friends had criticized Kiesler for his former 1950s version of the Endless House—a small uninhabitable egg—it was considered a castrated scrap of Kiesler’s original intention.¹²² Instead, Kiesler chose to build a “super-galaxy” in shells to give the space-time feeling of the Endless House.¹²³ To dwell inside its raw materiality became one of Kiesler’s ultimate obsessions.

The first form of the Endless House Kiesler built was too amorphous, so he abandoned presenting it at the MoMA; he instead invented a smaller version with new techniques.¹²⁴ Kiesler began cutting, hammering, and twisting together metal wire mesh to produce loosely defined hollow forms held up in tension. [Fig. 5.47] He doodled the size and shape of the house program by forming *bubble diagrams* that enveloped various intertwined spaces—some small, some large—that modulated to a series of intuitively defined intrinsic parameters. [Fig. 5.48] Kiesler worked intuitively as a sculptor—feeling his way through the form to shape his ideas.¹²⁵ Like a surreal artist, Kiesler accessed his autonomic nervous system—i.e. the nonlinear complexity of aconscious habitual experience—to evade the limited prescriptions of over rationalized thinking. Through his expertise from his life-long study of housing, bodily measure, and spatial relationships, Kiesler instinctively projected the size, shape, and quality of forms he was

intended to build Fuller’s structures first. All plans and models would be exhibited at the “Visionary Architecture” show September 1960—an exhibition Drexler explained was “devoted to buildings that were either impossible to execute at the time they were designed because of technological difficulties, or because no social framework existed that could support the new concepts.” Kiesler’s Endless House likely appealed for both reasons. Both difficult to build and too sexualized for functionalist sensibilities, it perhaps best represented Drexler’s ultimate interest to “focus public attention on the enormous time lag between what great architects have wanted to do and what they have finally been allowed to do.” The Endless House had been long in the making. See letter from Arthur Drexler to Paul Nelson, May 28, 1959, as held in Douglas Putnam Haskell Papers, 1866-1979, Box 14, Folder 9, Paul Nelson, Department of Drawings and Archives, Avery Architectural and Fine Arts Library, Columbia University, New York.

¹²² Frederick Kiesler, “Scarpita Endless House,” *The ‘Endless House:’ Inside the Endless House: Art, People and Architecture: A Journal* (New York: Simon and Schuster, 1966), 281-282.

¹²³ Ibid.

¹²⁴ Ibid.

¹²⁵ Similar to what D.H. Lawrence described like a skylark that sings through a “spontaneous or sympathetic consciousness, which flows like a flame from the corpuscles of the body...through the muscles and nerves of the sympathetic system to the hands and eyes and all the organs of utterance”—Kiesler doodled the shape of his design. See D.H. Lawrence, “Introduction to Pictures”, *Late Essays and Articles*, ed. James T. Boulton, (Cambridge: Cambridge University Press, 2004).

interested to produce. He allowed “intuition as method” to form his ideas.¹²⁶ He then smeared concrete over both the inside and outside of the mesh to create a series of undulating shell-like strips forming continuous spaces that he imagined fitting himself inside. [Fig. 5.49] Endlessness embodied virtual poetic spaces that resonated indefinitely between a series of forms. To achieve endlessness, Kiesler formed a multiplicity of spatial possibilities wrapped within a series of continuous temporal forms. He made an endless array of spatial intervals—a series of *soul spaces*—intertwined together intuitively (psychically) in tension.

“The Endless House is called ‘Endless’ because all ends meet, and meet continuously,” Kiesler said.¹²⁷ The final form of the house undulated with shapes and volumes that Kiesler demanded were not “amorphous, not a free-for-all form. On the contrary, its construction has strict boundaries according to the scale of your living. Its shape and form are determined by inherent life processes.” (EH 568) [Fig. 5.50, Fig. 5.51] Daily events of the family and guests shaped the form of the house—and not only guests of the conscious world, but those from the unconscious realm as well. For as Kiesler contended, “the ‘Endless’ cannot be only a home for the family, but must definitely make room and comfort for those ‘visitors’ from your own inner world. Communion with yourself. The ritual of meditation inspired.” (EH 567) The Endless House ideally provided comforting rooms to inspire meditation for inner communion. The home was “no longer a single block with either flat, curved, or zig-zag walls, Kiesler argued, for it had become a

¹²⁶ Intuition as method was a theory Bergson derived to resolve the problematics of binary logics and rational thinking. Bergson believed not altogether different from Plato, and recently Agamben, that false binaries are at the basis of all ineffective composite thinking. Bergson and later Deleuze developed intuition as method to problematize falsely stated perceptions to differentiate binaries into a series of qualitative (as opposed to quantitative) distinctions. They proposed dividing binaries by temporal qualities—understood in duration—into a multitude of intensities. Bergson recognized intuition fundamentally experiences temporal qualities—duration. Intuition is not merely a feeling, an inspiration, nor a disorderly sympathy, but a sense that perceives the qualitative temporal differences between things. Intuition can convey to our conscious perception intensive experiences. Intuition as method generates multiplicity out of conscious binary logic by instinctively imagining the qualitative temporal differences hidden between things. Endlessness—the elusive nothing that creeps between ideas (forms)—for Bergson was this intuitively perceived temporal quality of duration, this multiplicity that existed oscillating perpetually between intervals. See Gilles Deleuze, *Le Bergsonisme* (Paris, Presses Universitaires de France, 1966); English translation *Bergsonism*, tr. Hugh Tomlinson (New York: Zone Books, 1988) 13-35. See also Bergson, *Creative Evolution*, 317.

¹²⁷ Frederick Kiesler, “The ‘Endless House’: A Man-Built Cosmos,” *The ‘Endless House’: Inside the Endless House: Art, People and Architecture: A Journal* (Simon and Schuster: New York, 1966) 566 (hereafter cited in text EH).

softer, gentler space of recluse;¹²⁸ it was “rather sensuous, more like the female body in contrast to sharp-angled male architecture,” he mused. Inside the Endless House, “you could womb yourself into happy solitude.”¹²⁹ [Fig. 5.52] For Kiesler, the house was a body that one desired to inhabit; it was organic and non-rectilinear that provided for mental hygiene through an obsessive neurotic return to the womb. [Fig. 5.53, Fig. 5.54]

For Rank, an obsessive neurotic need to return to the womb stemmed from anxiety. But for Rank, anxiety came from the very essential nature of being born—upon exiting the maternal body—symbolized by the first fecal excretion, breath, or cry. Idealized in Rank’s theory in the *Trauma of Birth* was the notion that the womb was a warm—protective—nurturing environment in which a child developed in continuity with its mother. Rudely awakened to the cold harsh external environment an infant desired to return to that original humble dwelling. Separation anxiety Rank argued led to a neurotic need to return to the paradise of an ideal home. Of course, Rank gave no proof that such a place was in anyway comforting—Rank understood intrauterine fantasy was an *idealization* developed during extrauterine existence, and Rank in no way proposed a return to the womb was healthy. In fact, dwelling—the obsessive desire to regress to auratic unity surrounded by soft palpable warmth—can be an indication of an unstable and unhealthy life. For Rank and Freud it proved the infantile neurotic behavior pattern of a mal-adjusted person who had not yet developed facility to accept distinct subject-object relationships or reify “love” through external libidinal engagements. It was a narcissistic state of regression—as is all architecture that attempts to sublimate fear of action through internalized caves of the *unheimlich*.

Exposing the myth of this *uncanny aura*, the Greeks told the tale of the Minotaur, a hybrid monster that stood as a man with the head of a bull that lived inside a labyrinth until he was slain by the hero Theseus.¹³⁰ As Rank suggested Minotaur can be understood as the human monster

¹²⁸ Frederick Kiesler, “The Endless House: A Man Built Cosmos,” *Frederick J. Kiesler: Selected Writings*, ed. Siegfried Gohr and Gunda Luyken (Stuttgart: Verlag Gerd Hatje, Ostfildern, 1996) 130.

¹²⁹ *Ibid.* 126, 127.

¹³⁰ For more on the story of the Minotaur see Marcel Jean, *History of Surrealist Painting*, tr. Simam W. Taylor (London: Weidenfeld & nicolson, 1960) 231. See also Pierre Grimal, *The Dictionary of Classical Mythology* tr. A.R. Maxwell-Hyslop (New York: Basil Blackwell Inc., 1986) 124, 292; Adrian Room, *Room’s Classical Dictionary* (London: Routledge & Kegan Pauli, 1983) 108.

that lived inside the “complicated dark passages” of the labyrinth that “are a representation of the human intestines (the ‘Palace of Intestines’).” (OR 153-154) For Rank, the analytic concept of the labyrinth “as the prison” for “a mis-shapen form ([or] embryo [i.e. the Minotaur]) unable to find the exit, is clear in the sense of [an] unconscious wish fulfillment.” (OR 153-154) Inspired by Freud’s work on the “Uncanny” and the “Wolf Man,” Rank described this unconscious wish fulfillment as a neurotic infantile fantasy to return to the “underground labyrinth of the womb situation.” (OR 153-154) The endless environment of the labyrinth suggested a prenatal or digestive condition where there were only continuous spatial configurations riddled with enigmatic interior and exterior relationships.¹³¹ On the one hand the space of the labyrinth can be argued to be paradisiacal, while on the other can be said to lead one to wander about anxious, excited, and somewhat paranoid of what is yet to come.

Not surprisingly, Kiesler was given the role of Minotaur, in Richter’s surrealist “film-poem” *8x8* in 1957. [Fig. 5.55, Fig. 5.56] Kiesler’s architecture bore a striking similarity to Rank’s interpretation of the labyrinthine palace. Kiesler’s architecture however was not a simplistic return to intrauterine fantasy purely for regressive eternal bliss to completely avoid existence in the external world. For within Kiesler’s Endless House—at the darkest moment of solitude—sheltered in the warm palpable depths of intrauterine dwelling, Kiesler hoped to provide a phantastic dream world that could reach out to the cosmos and expand. He attempted to rely on the technology of magic illusion—theatrical projection, cinema, and even television as “Broadcasted Decoration”—to achieve expansive space.¹³² Although he recognized, “we *want* to live in a confined space, we want to be protected, so to say, from the outer world. What is important is the necessity of

¹³¹ Rank, *Trauma of Birth*, 72, 176. Only a hero, we are told by Rank, has the wherewithal to maintain clarity and recognition of exterior and interior relationships with critical agency of separation from the illusions and demonstrations of the labyrinthine condition. As such, it is the hero and the monster in the confines of an architectural manifestation of fantastic intrauterine experience that can be described as the place in which a critically paranoid and artistically hysterical battle can attempt to explicate the unconscious and conscious relationship as dream work, which can be defined as the awakening state of surrealist discourse.

¹³² Frederick Kiesler, “The Broadcasted Decoration,” *Frederick J. Kiesler: Selected Writings*, ed. Siegfried Gohr and Gunda Luyken (Stuttgart: Verlag Gerd Hatje, Ostfildern, 1996) 19.

temporary confinement.”¹³³ *Temporality* for Kiesler, however, could not happen within the shape of a box; it had to be formed biotechnologically in the shape of a shell, for as he stated:

when the moment comes when we want to move a wall way out, to breathe more fully-yes, when we want the ceiling to be higher, or the whole area to change into another shape-that is where the Endless House comes in. Because it has a twofold expression: first, it has the reality of the walls and the ceiling and the floor as they are...but also a lighting system...so that by changing the lights...one can expand or contract the interior in an illusionary way, You can't do that with boxes.¹³⁴

At the heart of Kiesler's interest in the Endless was the promise of the “illusionary way.” The Endless House provided no sense of boundary, but was still able to shelter. Kiesler created a machine for dreaming, as a living organism that could be inhabited and engaged by the body. Kiesler designed his Dream Machine for curative effect—to strengthen the body and psyche for discharging individuals back into the sensual world of men—digested, re-generated, and redeemed. [Fig. 5.57]

To strengthen the ego is a complex project, and as Melanie Klein argued in her pre-Oedipal theory of childhood development, phantasy and hallucination are primary to ego (and super ego) formation.¹³⁵ Born in a world without any self-distinction, Klein believed a child was bound to the mother's body without being as yet a separate object.¹³⁶ Challenged by experiences of both pleasure and pain indiscriminately introjecting everything, through phantasy and hallucination the child instinctively learns to project the negative, and idealize the positive.¹³⁷ It

¹³³ Frederick Kiesler, “Kiesler's Pursuit of an Idea,” 116; emphasis in the original.

¹³⁴ Ibid. 117. Sylvia Lavin's reading of the Austrian-American architect Richard Neutra's post-war houses contends with Kiesler's observations; she argues illusionary psychical space can be achieved inside boxed shaped houses. See Sylvia Lavin, “Open the Box: Richard Neutra and the Psychologizing of Modernity,” *Assemblage*, no. 40 (Cambridge: MIT Press, 1999), 6-25.

¹³⁵ See Melanie Klein, “Symbol Formation in Ego Development,” in *The Selected Melanie Klein*, ed. Juliet Mitchell (New York: The Free Press, 1986) 98.

¹³⁶ According to Julia Kristeva the mother's body acts with the child's as a sort of socio-natural continuum.” See Julia Kristeva, “About Chinese Women,” in *The Kristeva Reader*, ed. Toril Moi (New York: Columbia University Press, 1986) 148.

¹³⁷ Introjection for Klein is not limited to the physical experience of sucking up the mother's internal fluids for it also occurs with all other real objects and people as well, as she argued, “the child...in his phantasy, he takes into himself everything which he perceives in the outside world. We know that at this stage the child receives his main satisfaction through his mouth, which therefore becomes the main channel through which the child takes in not only his food, but also, in his phantasy, the world outside him. Not only the mouth, but to a certain degree the whole body with all its senses and functions, performs this ‘taking in’ process—for instance, the child breathes in, takes in through his eyes, his ears, through touch and so on.” See Melanie Klein, “Weaning,”

splits the continuum into bits. In bits, this feeling amounts to a state of disintegration, which is normally transitory.¹³⁸ This disintegrated body in bits, the ego in bits is reconfigured through a curative—reparative stage ushered in by guilt feelings of the developing superego.¹³⁹ The ego resolves identity and spatial configurations from amongst the flux and flows of partial objects in continuum. Whether intended or not, Kiesler had searched for an architecture to create a similar zone. As the editors of *L'Architecture d'aujourd'hui* once said, “but does it not seem that Kiesler pursues one goal only: to reach Man, to destroy him in some fashion to re-create him, and to let him eject a new ‘elan’ of imagination and liberty?”¹⁴⁰

Kiesler's Endless House performed to stimulate an idealized paradisiacal life inside an ergonomically designed illusionary cinematic spatial experience that could expand and contract to engage one's every motion and desire. It was geared to rebuild both the physis and the psyche of the dweller—tailored to mediate the flux and flow of the evolving demands of daily existence. Designed to adapt to constantly changing parameters, the house was built of materials that on a molecular level could absorb and resist shock. Fluctuating between reparation (building up) and destruction (breaking down) the house was ideally porous and protective; it enveloped the body in a phantastic elastic skin. This architecture of eternal contraction and expansion (*détente*) assimilated the perceiving body within “the total artwork [*Gesamtkunstwerk*] of effects.” Surface boundaries became diffuse and elusive—yet remained immanently maintained through “organic creation.” Its transmutable shape characterized the disposition of its inhabitants stretched between introjected perceptions and projected actions. Dwelling found its home between illusion and reality—continuity and individuality—vision and fact.

in *Love, Guilt and Reparation & Other Works 1921-1945* (United States: Melanie Klein Trust, 1973) 291.

¹³⁸ Melanie Klein, “Notes on Some Schizoid Mechanisms,” in *The Selected Melanie Klein*, ed. Juliet Mitchell (New York: The Free Press, 1986), 184.

¹³⁹ Klein believed at moments this is a sadistic phase in which “phantasies and feelings of an aggressive and of a gratifying, erotic nature...are to a large extent fused together (a fusion which is called sadism).” At other moments this is a reparative stage, as the split ego reconfigures identity and spatial relationships and resolves its negative and positive feelings. For Klein the “desire to restore” is a creative labor that responds to reconcile embarrassing feelings of guilt associated with sadistic moments of both love and hate. Melanie Klein, “Weaning,” 293.

¹⁴⁰ The Editors, *L'Architecture D'Aujourd'hui*, “Translation from the French of the Editorial of *L'Architecture D'Aujourd'hui*,” June 1949, 1 (see chap. 1, n. 120)

Endless Politics or Perverted Ethics

In the same years, Kiesler completed his speculative research on his now famous Endless House, he faced a daunting ethical responsibility—whether to apply his psychoanalytical research to real world politics in the design for the Shrine of the Book. “The Dead Sea Scrolls unfold a new life for me, architecturally speaking—demanding a blunt reality, not a theory,” recalled Kiesler in his diary May 19, 1958.¹⁴¹ Kiesler and his business partner Bartos were hired to design a hallway display for the Dead Sea Scrolls in the new Hebrew University Library at Jerusalem in 1957.¹⁴² Kiesler however disagreed with the University’s functionalist plan in favor of a more realistic proposition. As he explained to the building committee, “there is much more involved here than the display of rare manuscripts”. (DS 323) To design a mere modern display Kiesler contended, the University already had a group of architects “talented in the tradition of Mies and Corbusier,” who could readily handle such an assignment. (DS 323) “It would just be a matter of getting enough donations,” he proposed, “to put in a marble floor and walls, bronze showcases, heavy rubber plants in corners, Mies van der Rhoë chairs and couches throughout, and air-condition the atmosphere—that would be the ‘modern’ way, in the great tradition of the Bauhaus,” Kiesler surmised. (DS 323) Instead, he believed there was a greater ethical responsibility at stake. A project of such sacred scale and value required a more insightful proposition. The Scrolls were merely tattered strips of parchment—“only decorative ciphers”—effectively illegible “to a wide world which cannot read Hebrew,” Kiesler observed. (DS 318) “Yet these signs,” he noted, “have shaken with their content the somnolent religious world of the cathedrals.” (DS 318) As Bartos agreed, “it was up to us to say something about them.”¹⁴³ The Shrine had to speak to the history of the scrolls and their awe-inspiring significance to the Jewish people.

¹⁴¹ Frederick Kiesler, “Dead Sea Scrolls,” *The ‘Endless House’: Inside the Endless House: Art, People and Architecture: A Journal*. (New York: Simon and Schuster, 1966) 318 (hereafter cited in text DS).

¹⁴² Bartos was originally hired to design a gallery display. But after initial planning meetings in Israel, Bartos returned to New York to consult his new business partner Kiesler as to the viability of the proposed scheme.

¹⁴³ Quoted by Marlin Levin, “The Shrine of The Book,” *Hadassah Magazine*, May 1965, Vol. 46 #9, frame 249-250, clipping found in Frederick Kiesler Papers, microfilm reel 128, Smithsonian American Archives of Art, Washington D.C.

For as it is told, in 66 A.D. Jewish rebels had control of nearly all of Palestine and Jerusalem until Vespasian of Rome sent his legions to besiege the city in 70 A.D.¹⁴⁴ The Romans slaughtered over 800,000 Jews, and pursued the Jewish rebels until their last stronghold fell at Masada in 73 A.D. Near that time, at the North Western end of the Dead Sea in Qumran, a sect of ascetic Jews, the Essenes joined the revolt. However, when the struggle seemed hopeless, they concealed their sacred writings on scrolls in large terra-cotta vessels in nearby caves. The surviving Jews dispersed throughout Palestine, but by 135 A.D. Hadrian of Rome crushed through all resistance. Nearly 1000 towns and villages fell and more than a half-million more Jews were killed. As it is told, the Judean caves, wilderness, Dead Sea, and Palestine remained silent to the Jewish people for almost the next 2000 years.

It was not until November 29, 1947 upon vote at the United Nations to dissolve British control of Palestine that the Jews believed they were free to form the independent state of Israel. This date remarkably coincided with announcement of the discovery of the Scrolls. A Bedouin goat-herder by the name of Mohammed Ahmed el-Hamed (nicknamed edh-Dhib, "the Wolf") found seven of roughly 850 missing scrolls and documents hidden in the Dead Sea caves.¹⁴⁵ Fragments were taken to Israeli Archeology Professor Eleazar Sukenik, who deciphered and purchased three of the scrolls.¹⁴⁶ The Scrolls contained parts of the Old Testament bible in its original language providing remarkable documentation of human history. Their authenticity had enormous value; the Scrolls provided proof to the legitimacy, heritage, and religious rights of the Jewish people. Their fortuitous return symbolized promise and success for Jewish independence in light of years of suffering, persecution, and unfathomable extermination.

Yet despite priceless value to world history, four of the other more complete scrolls surprisingly surfaced years later through an advertisement in the Wall Street Journal, June 1

¹⁴⁴ Jewish history as recalled by Kiesler, "Dead Sea Scrolls," 321. See also clippings "On the Hill of Zion," *Newsweek*; and Levin, "The Shrine of the Book;" clippings found in Frederick Kiesler Papers, microfilm reel 128, Smithsonian American Archives of Art, Washington D.C.

¹⁴⁵ For history of the scrolls discovery, see Kiesler, "Dead Sea Scrolls," 319. See also clippings "On the Hill of Zion," *Newsweek*, and Levin, "The Shrine of the Book".

¹⁴⁶ See Kiesler, "Dead Sea Scrolls," 320. An Armenian antiquities dealer had brought Professor Sukenik the leather scrolls across a barbed wire fence erected by the British to separate Israel from Jordan during the 1947 rebellions in Jerusalem.

1954.¹⁴⁷ Yigael Yadin, son of Professor Sukenik purchased the scrolls for \$250,000 with funds from Israeli Finance Minister Levi Eshkol, and New York philanthropist David Samuel Gottesman.¹⁴⁸ On February 13, 1955, Israel announced that the Gottesman Foundation would fund a shrine to display the seven scrolls now held in Israeli possession.

Gottesman's son-in-law Bartos, and Bartos' former Columbia University professor Kiesler, were given the commission.¹⁴⁹ They had worked most recently together on a remarkable display space for the World House Gallery, completed in New York, 1957. [Fig. 5.58] The gallery provided continuous curvilinear surfaces to display paintings and sculptures in endless correlation.

Kiesler was posed with a once in a lifetime opportunity to build his endless research project on an incredible symbolic scale for the Shrine of the Book. In light of his architectural interests for the past 50 years, it was not surprising Kiesler invoked in his first meeting with the client a familiar—if breathtaking—vision:

I wonder if one could find a plastic expression for the idea of 'rebirth'—that is, an architectural concept that would make visitors feel the necessity for each person to renew himself while yet on this earth. To give birth to oneself—not to be satisfied with the birth by a mother, but to re-create one's own being in the image of his one life experience. This is not, of course, rebirth after death, but rebirth during one's very own lifetime. Perhaps a Sanctuary of Silence, with the flow and return of water suggesting to everyone the Second Coming of himself. (DS 323)

The Shrine of the Book would be a distinct architecture, a unique modern tale. The form—"a plastic expression of rebirth" inspired by a remarkable story of a Wolf man who followed a goat into a cave to discover hidden treasures of Biblical dimension brought forth to redeem mankind—a return, a second coming, a rebirth outside the mother's womb. Although altogether phantasmagorical, Kiesler's proposal appeared altogether intoxicating.

With approval from President Mazar, Kiesler quickly sketched his vision. "The sanctuary proper would be a vessel," Kiesler described, "A double-parabolic, old time wine vessel. [Fig. 5.59] The lower parabola, bulging outward from cave of the earth.... The upper parabola...the

¹⁴⁷ See Levin, "The Shrine of the Book".

¹⁴⁸ Ibid. The Gottesman Foundation which also funded Kiesler's Endless House models in 1958 was established after the death of David Samuel Gottesman in 1956.

¹⁴⁹ Bartos had married Gottesman daughter Celeste in 1935.

mouth exhaling and inhaling space.” (DS 325) The container would pierce the floors of the newly planned University library to emerge from the roof to allow in light.¹⁵⁰

After initial approval, the project had three extensive revisions. The local architects responsible for the library first objected to the location of the form. “It seemed that the parabolas of the shrine were considered to be guerillas invading the cubicles of the Bauhaus,” Kiesler surmised.¹⁵¹ [Fig. 5.60] The Shrine was “Exiled,” as he lamented to a new site in front of the library.¹⁵² In this new scheme a partially submerged dome and patio were linked to the new library with an underground corridor alongside a stair that led to the nearby famed Monastery of the Cross.¹⁵³ This second scheme elaborated several new elements—including processional character and a free form Shrine—again the novel design challenged the aesthetics of the local architects.¹⁵⁴ The dome exceeded the functional requirements of the project and undermined the modern architecture of the University.¹⁵⁵

To prove their point, the University architects tested the design. In October 1959, they constructed a model dome without Kiesler’s consent, using two black rods at right angles spanned by chicken wire mesh and muslin—tattered and dangling.¹⁵⁶ No other elements were included—just a sham dome hanging in mid-air. “Totally missing were the architectural ritual of the one area following the other,” Kiesler bemoaned.¹⁵⁷ The dome was displayed without poetry

¹⁵⁰ See Kiesler, “Dead Sea Scrolls,” 325. As the library building had already been designed and excavations had begun, Kiesler designed the dome to penetrate the center of the building but not interfere with the boxy exterior. The wine vessel brought light into the center of the space down to the entry lobby.

¹⁵¹ Frederick Kiesler, “Dome’s First Act,” *The ‘Endless House:’ Inside the Endless House: Art, People and Architecture: A Journal*. (New York: Simon and Schuster, 1966) 328.

¹⁵² Ibid.

¹⁵³ The structure of the shell remained a challenge for Kiesler insisted the dome structure remain independent of any outside support from top to bottom. The structural engineer in this scheme posed to construct a circular bearing wall to support the top-half of the dome, more standard construction. Kiesler fought to maintain the integrity of his continuous shell design. Ibid.

¹⁵⁴ Frederick Kiesler, “Airplane Flight,” *The ‘Endless House:’ Inside the Endless House: Art, People and Architecture: A Journal*. (New York: Simon and Schuster, 1966) 331.

¹⁵⁵ Ibid. The local architects reminded Kiesler that there were only seven scrolls to display, and no need for his extravagant design. They suggested it he rethink the problem.

¹⁵⁶ To Kiesler’s dismay, the dome “looked like a gigantic skeleton of a crown set upon a rocky skull.” Ibid. 334.

¹⁵⁷ Ibid.

Kiesler resigned; “it was a cloak-and-dagger murder...a monster building...the project was dead, they had buried it alive.”¹⁵⁸

The Shrine was moved to its final location on the nearby hilltop development called Nave Shaabab (Peaceful Habitation) among three new museums designed by Al Mansfeld of Haifa and Dora Gad of Tel Aviv, and sculpture garden by Noguchi.¹⁵⁹ The design for the Shrine of the Book relied on a series of architectural elements correlated together along a path of travel. Each element carefully orchestrated to suggest a unique abstract form that would give its meaning in correlation to other elements in the composition. [Fig. 5.61] Similar to Kiesler’s extensive adaptation of the scroll in his art galleries and building projects, the architects imagined their work as a series of symbolic gestures that compiled together through metaphor to form a mythological narrative that unfolded through the experience and mystery surrounding ritual passage through the Shrine. [Fig. 5.62, Fig. 5.63] “Our task was to create a series of architectural events,” Bartos explained that did not consist of one or two units, but sixteen different constituents that work together to incite value and meaning.¹⁶⁰ The building performed, similar to a scroll, unfolding its history and power to the viewer.

Opening in April 1965, visitors approached the site along a slowly ascending marble promenade flanked by pines and olive trees—symbols of life, endurance, and light. [Fig. 5.64] The promenade opened onto a broad square plaza where the partly submerged circular dome appeared to float above the pool of water. [Fig. 5.65] Although occasionally referred to a large breast, the dome appeared to most—the shape of an “onion” with its rings of hand carved hard-

¹⁵⁸ Ibid.

¹⁵⁹ See “The Sculpture Garden,” *Supplement to Israel Digest*, 1965. See also “Symbol of State: Ian Nairn Looks at the New Israel Museum,” *The Observer, Weekend Review* May 14, 1965; clippings found in Frederick Kiesler Papers, microfilm reel 128, Smithsonian American Archives of Art, Washington D.C. An open-air sculpture garden by Noguchi and a future library were also included. The hilltop site was part of the new government center on the western edge of Jerusalem, one mile from the border of Jordan. It formed a triangle with the Hebrew University and the new Parliament House above the valley of the walled 11th century Monastery of the Cross. The scheme formed a strong modern planning structure using clear authoritative geometry.

¹⁶⁰ Levin, “The Shrine of the Book.”

fired ceramic tiles of decreasing corrugation set over a continuous concrete parabola shell.¹⁶¹

The top of the dome was cut-off to allow light to penetrate the interior, and fountains surrounded the dome to keep the underground Shrine naturally cool. A black Basalt wall blocked the natural elements on the exposed hilltop, and stood in contradistinction to the white dome. [Fig. 5.66]

Whether intended or not, the oversized sculptural forms set apart in tension provided a virtual wealth of opportunity for poetic imagination. To some the subterranean sanctuary represented the rebirth of the Israeli people, and the wall—with fire blazing atop—recalled the heavy burden of the past; while to others they represented symbols of life and death.¹⁶²

From the plaza, visitors descended alongside a pink stone wall and marble staircase to the plaza below to enter a set of bronze doors into a long cavernous tunnel, past a series of curved openings that undulated alongside a set of equidistant displays.¹⁶³ [Fig. 5.67] At the end of the cave, visitors began their ascent into the light of the dome structure where the Torah of Isaiah was presented in circular glass display. [Fig. 5.68] The scroll surrounded an oversized handle circumscribed by stone stairs that spiraled down into a seminal crypt. To protect the scrolls the handle could retract up and down. In climax, Kiesler hoped the handle would shoot water out the central oculus onto the exterior dome. Too erotic, suggestive, and not altogether pragmatic—they had to abandon the idea. [Fig. 5.69]

The Shrine was built as a memorial and symbol of great power. It was a “Symbol of State” and “Gesture of Great Confidence” as reported newspapers at the time.¹⁶⁴ Yet despite winning a national AIA Merit Award in 1966, critics readily attacked the Shrine specifically for its

¹⁶¹ “On the Hill of Zion”; see also “Dead Sea Scrolls ‘Shine’ Opened,” *The Israel Digest*, Vol III. No. 9, April 23, 1965, 2; Clipping found in Frederick Kiesler Papers, microfilm reel 128, Smithsonian American Archives of Art, Washington D.C.

¹⁶² Dead sea scrolls “Shrine” opened; see also “Israeli Museum to House Jewish Historical Testaments, New York Times, Sunday May 9, 1965; see also Marlin Levin, “The Shrine of The Book”; clippings found in Frederick Kiesler Papers, microfilm reel 128, Smithsonian American Archives of Art, Washington D.C.

¹⁶³ The cave recalled Kiesler’s 1942 Gallery Exhibition design or more provocatively doorways through Peter and Alice Smithson’s Plastic House of the Future, 1956.

¹⁶⁴ See “Symbol of State: Ian Nairn Looks at the New Israel Museum”; see also John Russell, “Gesture of Great Confidence,” *The Sunday Times*, May 16, 1965; clippings found in Frederick Kiesler Papers, microfilm reel 128, Smithsonian American Archives of Art, Washington D.C.

non-functional aesthetic. They saw it as quite “fey”, “off-beat”, and “flamboyant” with very disturbing and undeniably surreal psychoanalytic character.¹⁶⁵ [Fig. 5.70]

In his reference to psychoanalytic theory, in particular Freud, Kiesler perhaps more than any other architect consciously acted out the psychological repressions of the modern period. For Kiesler, the story of the Dead Sea Scrolls carried a number of references to Freud's famous story of the “Wolf Man”.¹⁶⁶ “This account seemed to me beyond belief,” Kiesler recalled, “but as I learned later, was factual indeed. The earth had given forth seeds of truth,” Kiesler said that inspired his design. (DS 319) In retelling the story of the Scrolls in his diary he emphasized the warm mud caves, the goat, the vessels, and the curious nickname of a boy—the Wolf Man. But in light of his final design for the Shrine of the Book and the history of Kiesler's interests, his intentions seem telling.

For Freud's famous case study of the Wolf Man was of a young man, whose childhood had been riddled with trauma that led to anxiety, frustration, and guilt. The Wolf Man exhibited these tendencies through obsessional neuroses demonstrated through appetite, piety, and sadomasochistic tendency. His experiences with incest and abuse from his sister amidst unrequited love for his nursemaid and father fused into an erotic desire laden with deep-rooted anxieties and fears. Through dream work, the Wolf Man's anxiety was revealed in the form of seven wolves that represented a story of “The Wolf and the Seven Little Goats” perched in a tree, not unlike young Kiesler's formidable tale of the Chestnut tree. Freud's Wolf boy had sadistically carved into his Walnut tree only to fear cutting off his finger—the digit. In the end, Freud treated the Wolf Man with periodic enemas that resolved his intestinal problems, along with his obsessional neuroses. The enema, Freud observed was as a symbol of re-birth that ripped or tore through the bowels of the Wolf Man's infantile veil, his caul or lucky-hood.¹⁶⁷

¹⁶⁵ See “Symbol of State: Ian Nairn Looks at the New Israel Museum”.

¹⁶⁶ Sigmund Freud, *Aus der Geschichte einer infantilen Neurose* (1918); English translation “From the History of an Infantile Neurosis”, tr. J. Strachey, *Standard Edition of the Complete Psychological Works of Sigmund Freud*, ed. J. Strachey et al., 24 vols., London, 1953-74, XVII, 7-122; reprinted in *Three Case Histories*, ed. Philip Reiff (New York: Macmillian Publishing Company, 1963; 1996 edition) 133-280.

¹⁶⁷ For more on the study of the “Wolf Man”, “The Uncanny”, and the caul or lucky hood, see Vidler, *The Architectural Uncanny*, 153, 241.

The Wolf Man gave birth to feces, Freud's symbol for all gifts, all disjunction, and all fragmentation offered to the loved one (including that of the penis, money, art, architecture, and the baby). Freud believed intrauterine fantasy stemmed from unresolved sexual satisfaction in the libidinal world. For the Wolf Man, according to Freud he desired to copulate both with his mother and with his father. He had a wish-fantasy to be back in the womb. But from the womb he hoped to take his mother's place and be with his father, with the ultimate goal to be reborn a baby, free of all previous traumatic life experience. In his extreme architectural vision, Kiesler hoped to perform this ultimate cleansing—to re-generate and liberate humanity, to start all over, free again. [Fig. 5.71] Through building the Shrine of the Book with all its psychoanalytic nuance and eroticism, Kiesler performed his greatest therapeutic act—to rip through modernism's tectonic veil and release architecture from all its pseudo-functional repression.

6. Conclusion: Elastic Architecture - The Universal Theater

So the form determines the manner of life of
the animal, and the manner of life in its turn
reacts powerfully upon all forms

Goethe

“Just hold onto your hat and be ready to orbit,” declared newspaper critic Hubert Houssel of the Houston Post, April 8, 1962. “The Ideal Theater: Eight Concepts” exhibition is an “Adventure...in Space,” he proclaimed—“the most bizarre and arresting this country has seen on the theatre subject.”¹ Setting out on national tour January 27, 1962 with its first stop—the Museum of Contemporary Crafts, 29 West 58th Street in New York City, the exhibition presented eight visionary theater designs that all proposed pragmatic and utopian solutions to create innovative theatrical forms. [Fig. 6.1] “In an effort to plot a course for the theater’s further development,” as Houssel explained, “by releasing...[theater] from a straitjacket which allegedly strangles[,] and allowing it to breathe in a new spatial realm,” The Ideal Theater Eight Concepts exhibition aimed to revolutionize modern theater design.²

Organized by the American Federation of Arts through a grant program initiated by the Ford Foundation, the exhibition set to challenge the limits of Broadway Theater.³ “Broadway theaters...had not changed...since 1905,” playwright Arthur Miller argued during initial programming meetings at the Ford Foundation offices.⁴ He and other playwrights felt limited by the encumbrances of New York theater spaces as they felt forced to adapt their plays to outmoded stage designs. “I think a new form is going to burst out because the world is now

¹ Hubert Houssel, “Adventures in Space: The Future Theatre As a Museum Study,” The Houston Post, Saturday, April 8, 1962, Frederick Kiesler Papers, microfilm reel 128, Smithsonian American Archives of Art, Washington D.C.

² Ibid.

³ A conference held on April 3-4, 1959 in the Ford Foundation offices, initiated the research program for the exhibition. Under director W. Mc Neil Lowry prominent playwrights, directors and theater designers were invited to muse over the problems, themes and trends facing the future of theater. See W. McNeil Lowry, “Introduction”, in *The Ideal Theater: Eight Concepts* (New York: The American Foundation of Arts, 1962) 7.

⁴ Arthur Miller, “The Ideal Theater,” in *The Ideal Theater: Eight Concepts* (New York: The American Foundation of Arts, 1962) 8.

impossible to reflect in such a cubic fashion,” Miller explained.⁵ Playwrights wanted more flexible staging arenas and the Ideal Theater exhibition was planned to challenge normative design trends.

Selected from a list of nominees, eight teams of prominent architects and designers received grants to complete projects for the exhibition.⁶ [Fig. 6.2] Nominated by Thomas Creighton of *Progressive Architecture*, Kiesler received the honor to participate due in part to his unique expertise as both a stage designer and architect. Kiesler was the only participant not to be part of a team. As finalists unveiled their futuristic proposals, they boasted an array of means and methods to liberate unbridled space for new theatrical events to unfold. The eight theater designs were arguably “violently diverse,” yet all advanced flexible auditoriums and theatrical arrangements that exploited the latest electronic and computer technologies available.⁷ [Fig. 6.3] Lighting techniques could affect the mood of the audience, stage performances could transform from indoor, to outdoor, three-quarter, or in the round. [Fig. 6.4] “Projected pictures could dissolve directly and smoothly into actual stage settings”—all as one critic declared at the miraculous “touch of a button.”⁸ [Fig. 6.5]

Yet despite similar intention to create flexible stages with multiple illusory affects, Kiesler’s plan and form had unique shape categorically different from the seven others schemes.⁹

⁵ Ibid.

⁶ Teams included: producer, designer and stage director Ralph Alswang working with renowned architect Paul Rudolph; stage designer Eldon Elder and architect Edward Durell Stone; designer Barrie Greenbie and choreographer Elizabeth Harris; successful New York stage designer David Hays and international architect and Architectural Forum editor Peter Blake; Yale Drama School professor and designer George C. Izenour teaming with head of the Department of Architecture at Carnegie Institute of Technology, architect Paul Schweikher; designer Jo Mielziner and architect Edward L. Barnes; and New York stage designer Donald Osenlager and internationally recognized theater consultant Ben Schlanger.

⁷ Audiences would as William Wolf of the Milwaukee Journal claim, “settle down in a theater, see a movie and then suddenly find the actors seeming to emerge from the film to continue a live performance on stage.” See William Wolf, “Futuristic Theater to Combine Movies and Living Stage,” *The Milwaukee Journal: Green Sheet*, Monday February 19, 1962, clipping in Frederick Kiesler Papers, microfilm reel 128, Smithsonian American Archives of Art, Washington D.C.

⁸ See Milton Esterow, “Theatres of Tomorrow Shown at contemporary Museum Here,” see also “Models of Things to Come? 8 New Theaters Going on the Road,” *Herald Tribune*, New York, January 26, 1962, clippings in Frederick Kiesler Papers, microfilm reel 128, Smithsonian American Archives of Art, Washington D.C.

⁹ For more on the seven other schemes see *The Ideal Theater: Eight Concepts* (New York: The American Foundation of Arts, 1962) 13, 27, 41, 55, 73, 109, 127. See also *N.Y. World Telegram*, January 27, 1962; see also Ann Holmes, “The Spotlight, alley Group Goes Shopping; Will theater

[Fig. 6.6] While other designs developed along the functionalist trope “form follows function,” Kiesler’s formal planning strategies exceeded any obvious correlation to their rational requirements. Participating architect Paul Rudolf’s scheme for example compiled quadratic shapes that conformed to specific known measurable components of his theater. [Fig. 6.7] Kiesler’s scheme instead had additional spaces in varied locations, multiple redundant forms, expansive circulation zones, and a distributed cellular construction.¹⁰ [Fig. 6.8] Kiesler had combined what critics described as a “molded, free-form auditorium and skyscraper,” that they compared to the shape of a “vast potato” or “unborn moose”.¹¹ The Universal Theater had a vegetative quality with an embryonic structure. [Fig. 6.9, Fig. 6.10] It was much larger than any other schemes and went beyond the given program to incorporate a thirty-story tower that could house theater, film, offices, and sporting events simultaneously within one elastic spatial configuration. [Fig. 6.11, Fig. 6.12]

Kiesler’s “*elastic spatial planning*” strategy as he called it offered “*the possibility of creating...[an] environment best suited to each species of the performing arts.*”¹² Referring to the consequent organizational scheme of his Universal Theater designed to house “*the most diverse types of productions,*” Kiesler suggested theater would no longer “*have to be squeezed into the*

Look Like These?,” *Houston Chronicle*, June 10, 1962; clippings in Frederick Kiesler Papers, microfilm reel 128, Smithsonian American Archives of Art, Washington D.C.

¹⁰ Kiesler’s Universal incorporated his studies of termite houses to elaborate cellular chamber structures in the form of a naturalized skyscraper with an egg shaped auditorium that produced atmospheres of auratic sensibilities he saw as a “sheltering sky”. Kiesler was invited to submit an outline of a stage or theater concept he wished to explore for initial judging. Kiesler began the design after returning from a trip to Italy in July 1960, where he visited his nephew in Naples and Positano in addition to Carlo Scarpa’s museum exhibits that he hoped to write about and publish in American architecture journals. He completed his Universal Theater in nine months, which included large plans, sections, elevations and a 1/4” scaled model in plaster and wood that he cast for \$6,000 in aluminum (now held at the Harvard Theater Collection). See letter Thomas H. Creighton to Frederick Kiesler, August 27, 1959; see also letter Thomas H. Creighton to Frederick Kiesler, August 20, 1959, both in Frederick Kiesler Papers, Box 4 of 7, Correspondence 1959 Folder, Smithsonian American Archives of Art, Washington D.C. See also Frederick Kiesler to Carlo Scarpa, July 18, 1960, Frederick Kiesler Papers, Box 5 of 7, Correspondence June-July 1960 Folder, Correspondence, Smithsonian American Archives of Art, Washington D.C.

¹¹See Norman Nadel, “Ideal Theaters Envisioned In Crafts Museum Display,” *N.Y. World Telegram*, Sunday, January 27, 1962; see also Creighton Peet, “‘Ideal’ Theaters Mingle Actors,” *Virginian-Pilot*, Norfolk Virginia, February 18, 1962; clippings in Frederick Kiesler Papers, microfilm reel 128, Smithsonian American Archives of Art, Washington D.C.

¹² Kiesler, “The Universal Theater: Poetry Versus Automation,” *Inside the Endless House*, 491; emphasis in original.

strait jacket of a fixed architectural scheme."¹³ Instead, the Universal would accommodate a series of programmatic species tailored to varied activities and needs.¹⁴

To achieve simultaneity within an organic building structure, Kiesler relied heavily on his knowledge and understanding of theater. He had already developed major commissions in New York from 1926-1933 that informed his 1960 Universal Theater design. [Fig. 6.13] Commissioned by President Ralph Jonas of the Brooklyn Chamber of Commerce in 1926, Kiesler designed the Brooklyn Heights Performing Arts Center using traditional forms in innovative ways. To perform variably and flexibly, he used a central vertical open flyway to serve one large or two varied theaters simultaneously. Time made co-extensive with space opened audience participation to the possibility of multiple theatrical events.

In addition to his application of illusory affects and distractive techniques, he employed in his film theater, housing, and gallery exhibition projects, Kiesler designed a festival theater for Woodstock, New York in 1932. For his Woodstock theater design, Kiesler derived a complex analysis for a flexible theater program. [Fig. 6.14] Woodstock, Kiesler observed was a rural resort town where theatergoers arrived by car at varied rate with maximum attendance occurring during the summer festival season. Kiesler quickly realized, "the public is not to be received as a unit mass [at any given point in time], but as a changing flux of independent groups."¹⁵ Actors, artists, sporting enthusiasts, and spectators arrived on varying days for different events and stayed for inexact duration. Crowds generally accumulated during June and July with peak performances in August. Kiesler looked closely at varied criteria shaping the events and applied that research to advance his thinking.

To formalize these temporal parameters in a cohesive theater design, Kiesler charted the types and sizes of multiple stages, arenas, and halls in coordination to the number of people

¹³ Ibid; emphasis in original.

¹⁴ Kiesler designed a "new shell structure, built on the principles of continuous tension [that] seems to be the right container for infinite variations of sound, light and stage action." See Kiesler, "The Universal Theater: Poetry Versus Automation," 488.

¹⁵ Frederick Kiesler, "Festival Theater: The Space Theater for Woodstock, NY," *Shelter* (Vol. 2, No. 4: May 1932) 42.

attending the performances throughout the year.¹⁶ [Fig. 6.15] He determined the maximum and minimum limits of the audience based on failures of existing local theaters, and analyzed the range of stage and auditorium sizes that might fit an evolving performance schedule. From this information, he proposed a multi-space theater that could adapt to accommodate a number of situations.

The Woodstock theater had two stages on either side of a central flyway. [Fig. 6.16] The smaller stage provided for intimate performances that could occur at the same time as larger events in the main auditorium. [Fig. 6.17] The auditorium could extend to include a mezzanine, and the entire stage could spread-out from the center to create one large arena. [Fig. 6.18]

Space could adapt to shifting action on stage producing multiple audience-spectator interrelations for different events. To study the possible staging patterns, Kiesler diagramed a series of dynamic scenarios showing actors, chorus, and crowds moving about freely on stage and off. [Fig. 6.19, Fig. 6.20, Fig. 6.21] Kiesler evolved theatrical form tailored to varied performances using a series of mechanical devices.

Kiesler's Woodstock Theater took the form of a temporary structure—a flexible ephemeral construction held together in tension with lightweight easily fabricated tubular supports of metal and fabric coverings.¹⁷ [Fig. 6.22] “‘Lithesome’ seems to describe it,” wrote Fuller, “many designs will be inspired by his intention.”¹⁸ Although never built arguably due to the depression and perhaps the complexity of its overly mechanized system—as an unrealized research experiment in advanced elastic spatial systems, the Woodstock Festival Theater gave Kiesler advantage to think beyond expectations for his 1960s Universal Theater project.

As other stage designers and architects in the Ideal Theater Eight Concepts exhibition used mechanical contraptions for adaptable moving stage devices that would achieve responsive

¹⁶ Ibid. 43. Quantities ranged from 84 to 535 people with the possibility of growth up to 2000 participants. Kiesler published his extensive research for The Space Theater for Woodstock in *Shelter* and also Morton Eustis, “A Universal Theater, Frederick Kiesler’s All-Purpose Community Playhouse,” *Theater Arts Monthly*, June 1933, 447-447. See also “The Universal.” *The Architectural Forum* 57, December 1932, 536-542.

¹⁷ Prefabricated and assembled with flexible joints out of steel, canvas, and wood—the city could erect and demount the theater at a reasonable cost in theoretically only two weeks. See “The Universal.” *The Architectural Forum* 57, 542.

¹⁸ Kiesler, “Festival Theater: The Space Theater for Woodstock, NY,” 42.

flexibility alongside atmospheric effects, Kiesler had an alternative solution. By multiplying time with space, Kiesler generated a manifold theater—a responsible system to create an environment of discourse and debate.

For the Universal Theater, the traditional central flyway became an elaborate thirty-story professional office space that served the performing arts. [Fig. 6.23] It housed large and small television studios and radio stations, workspace for publishers, record and movie producers, with additional floors for exhibition spaces. [Fig. 6.24] All tenants shared common dining, storage, and workshop facilities. Business, entertainment, and art combined socially, economically, and culturally through programmatic integration.

Audience and spectators were free to flow in and around fixed and revolving seating arrangements on multiple tiers. [Fig. 6.25, Fig. 6.26] Balcony seating surrounded a decentralized oval auditorium that incorporated projection, communication, and satellite towers to generate multiple, vast, changing ambient effects that expanded spatial boundaries through distracting cinematic illusions. [Fig. 6.27] Seats, guardrails, and interior surfaces *modulated* to support multiple bodies-in-motion correlated to shifting actions. Large permanent and mobile cycloramas provided backdrop for experimental and traditional theatrical events. [Fig. 6.28]

The Universal provided for a great variety of spectacles: operas, reviews, large-scale dramas, small-scale dramas, symphonies, choral works, intimate quartets, solo concerts, conventions, and large public meeting halls.¹⁹ [Fig. 6.29] Moving crowds or swarms of people could appear along various walks and runways on multiple levels in full view of the actors and the audience—actual happenings external to theater events instantaneously communicated to a waiting audience—“making everyone a participant,” Kiesler explained.²⁰ The Universal Theater was an Endless Theater as far as vision, sound, and movement were concerned he said; it provided an endless array of enfolding and unfolding spaces.²¹

¹⁹ “The Universal Theater is designed to give the audience as well as the actor an instrument which can be manipulated by the stage director as a transformation center of magic illusion and touch-and-go reality.” Kiesler, “The Universal Theater: Poetry Versus Automation,” *Inside the Endless House*, 490.

²⁰ *Ibid.* 491.

²¹ *Ibid.* 489.

The Universal merged theater with everyday life. Actors and spectators melded with the workings of corporate America. Kiesler's urban theater combined the main lobby of a business skyscraper with the foyer of a 600-person theater alongside a series of smaller stage halls for up to 300 people.²² Workers became spectators, if not actors. As a vast cultural enterprise, the universal provided opportunity for art to influence the world of business as business supported the world of art. The sophisticated interrelationship between art, action, play and everyday working life with business production and capitalist expansion, created a unified environment where it was ultimately unclear if the artists were free to affect the life of the worker, or to what extent business would define the role of the art. Intermixing cultural and business communities in symbiotic co-evolutionary relationship through mass mediated communication created event spaces that invoked discourse, interaction, and debate. Temporal regulations imposed by any one species may modulate to dominate others at any given time, but in a highly distributed manifold environment, opposing forces will have space to adapt, reconstitute, or mutate to resist and evade these governing structures. Plays on stage may in fact be commercialized, but in dispersed venues throughout the Universal they might still prove resistant if not revolutionary.

"If we could convert our static functions of design into design-flows of life forces and thus replace defunct functional architecture with: *Process Architecture* we will have done our share as social beings and conceded our conceit as pseudo functionalists," Kiesler insisted.²³ [Fig. 6.30] Process architecture for Kiesler, evolved from a vitalist perspective that attempted to generate form in response to intrinsic life forces. Although it is hard to accept any essential basis for motivation in life, similar to stage design, Kiesler modulated architecture to the rhythms and sounds of everyday live performances. Structures ideally responded to unseen programmatic forces while at the same time evolved to ever-changing sets of varied parameters. Although, Kiesler's humanist design approach failed to incorporate extrinsic interrelationships of site or detailed structure—his architecture was not amorphous, not a free-for-all form. His buildings derived through a generative process of insightful research.

²² Ibid. 488.

²³ Kiesler, "The Electric Switch or the Switch to Process Architecture," *Inside the Endless House*, 383.

Kiesler saw the world as invariably changing, always evolving—in a constant state of flux. He conceived the Universal Theater as an organism of complex program with a vast network of spaces that could expand and contract through multi-media technology. Kiesler created illusive boundaries of dreamlike intensities that performed to diffuse walls into a riotous array of endless spatial atmospheres. The Universal provided spatial multiplicity for varied social and psychological experiences—it generated the ultimate illusory condition, where the body, mind, and soul of a vast crowd of people correlated in synchrony to the rhythms of music, sound, and dance—amidst the routine actions and events of everyday life. Although Kiesler’s Universal Theater was not recognized as his greatest achievement—it was perhaps his most synthetic design. The Universal Theater formed the *Gesamtkunstwerk*; it brought together the arts, architecture, and theater into one elastic space. [Fig. 6.31]

In Kiesler’s fascination with elasticity as a structural and spatial planning strategy, he derived from his research into the natural sciences and psychoanalysis new forms of architecture that could perform in correlation to the demands of organic life. He hoped to construct elastic architecture *modulated* to the actions of moving bodies and systems in order to derive more productive and less repressed modern living environments. To this end he predicted the coming of a new spatial structure—continuous tension shell technology—a second modern order that would enable a new conception of space—endless space.

The Endless comprised a variety of spatial structures and elastic strategies over the course of Kiesler’s lifetime that conflated distractive techniques from film with habits of engaging architecture to develop a provocative interrelationship—the illusion of *moving space*.²⁴ Endless space vibrating between the intervals of continuous unfolding planes that wrapped around the body, while at the same time moved with the unconscious actions of the viewer suggested a new form of 20th century architecture no longer bound to a fixed place in time. Endlessness produced between continuous surfaces correlated to the actions of bodies-in-motion formed a spatial condition that evolved to the habits of the viewer in a constant state of distraction. In his aim to

²⁴ Siegfried Kracauer, *Das Ornament der Masse: Essays*, by Suhrkamp Verlag (Suhrkamp Verlag, 1963); English translation “Cult of Distraction,” *The Mass Ornament: Weimar Essays*, tr. and ed. Tom Y. Levin (Cambridge: Harvard University Press, 1995), 324.

reconstitute a synthetic world that recreated primal auratic unity—Kiesler discovered a new spatial sensibility not limited to the internal condition, but that could extend beyond to connect time and space. In all his endless projects from his illusory theaters and houses to his organizational exhibition strategies—Kiesler fused the movement of life with the surrounding environment by stimulating the haptic to elicit autonomic *affects*.

To consider the impact of spatial illusion as it merges with the tectonic body of architecture and in particular, its impact on dwelling, this dissertation has focused on Kiesler's work from his early interests in film and stagecraft, to his most sophisticated housing and theater designs. Kiesler throughout his life sought to investigate the promise of the applied arts to develop a coextensive relationship between difference and continuity. His architecture performed to seam together a series of partial objects in continuum, by fusing together architecture with film in conterminous relationships.²⁵ Kiesler integrated the applied arts and film in continuity to achieve *the total artwork of effects*.

Combining distraction to stimulate autonomic reflex action of habit alongside or coterminous with continuity is a complex project, and with it comes a smoothing over of criticality as the shock of experience and difference is *modulated* into an endless unified whole that moves the body and mind autonomically. Conscious perception represented as a codified snapshot of distracting reality is seamed over to support a false impression of a cohesive reality simulating duration through the magical dictation of an animated film process that narrates a cohesive image of reality which supplants the architectural background. Using the applied arts Kiesler combined the spatial effects of architecture and the illusory effects of the cinematic in his shop window designs, Endless House, and Universal Theater projects. Kiesler's designs approached Kracauer's condemnation of "*the total artwork [Gesamtkunstwerk] of effects*" in achieving their result. Kiesler simultaneously in the words of Kracauer "raise[d] distraction to the level of culture aimed at the masses," while at the same time "glue[d] the pieces back together after the fact and

²⁵ See Anthony Vidler, "The Explosion of Space: Architecture and the Filmic Imaginary," in *Film Architecture: Set Designs from "Metropolis" to "Blade Runner"*, ed. Dietrich Neumann (New York: Prestel, 1996), 24.

present them as organic creations.”²⁶ Through contraction and expansion (*détente*) of the architectural body, Kiesler manufactured perception to incite desire and consumption. If the ancients had composed the visual and temporal field and the modern sciences had decomposed it, through his naturalized structures and responsive elastic systems Kiesler made a synthetic attempt to seam those distinctions back together.²⁷

Kiesler’s project, whether intended or not, undermined critical theory and any attempt to inform the masses outside the dictates of capitalist production. Continuity undermines any critical effort to inform society. Kiesler’s *plastic* forms and *auratic* spaces served to facilitate fluid autonomic action—to keep bodies moving endlessly—flowing without the disruptions of conscious thinking. Architecture as film can serve as a covert training ground for changing perception and motivating action, but it can also fall prey to the politics, ethics and economics of capitalist society and culture. It can be used as a “borrowed” weapon as Baudelaire suggested (of show windows) in an ongoing struggle for power and control that affect our everyday lives through our *habits* of action. But there is no guarantee of the effects or any way to ensure avant-garde tactics will not be borrowed back—with ever more increased efficacy. Thoughtful *Resistance* instead of unwitting *action* has often proved a better tactic.

Kiesler’s project, however suggests an alternative approach. In response to varied evolving forms of pressures, elastic systems can confront and relieve pressures of everyday life. Performing similarly to the interiors of the Art Nouveau, as stated by Walter Benjamin, where 19th century interiors used plasticity of wrought iron and concrete as a naturalized casing to “confront the technologically armed environment,” elastic architecture poses varied tactics to confront the evolving perceptions of technological aggression.²⁸

Elastic architecture provides the structure to yield, while at the same time the space to resist, work through, and respond to shifts in evolving cultural conditions. For Kiesler the

²⁶ Kracauer, “Cult of Distraction,” 324.

²⁷ Rabinbach, *The Human Motor: Energy, Fatigue, and the Origins of Modernity*, 114.

²⁸ Walter Benjamin, “Paris – the Capital of the Nineteenth Century,” *Charles Baudelaire: A Lyric Poet in the Era of High Capitalism*, tr. Harry Zohn (London: NLB, 1973), 168. Quote revised to “confronted by the technologically armed world,” in Walter Benjamin, “Paris – the Capital of the Nineteenth Century,” in *Walter Benjamin: Selected Writings, Volume 3, 1935-1938*, ed. Howard Eiland and Michael Jennings, tr. Edmund Jephcott, and Howard Eiland (Cambridge: Harvard University Press, 2002) 38.

biological analogy proved productive; it invoked a search for structural precedents found in Nature that could be adapted to naturalize modern technology. Elasticity in itself could not solve societal problems, but it historically posed an analogy to invent new forms through extensive research that might best conform to human nature and environmental needs—elastic structures do not breakdown or give in to the shock of external pressures. But for Kiesler, elastic architecture could not be achieved on scale with the demands of an evolving society by relying on new materials and new technologies alone. Instead, he proposed innovative temporal planning strategies modulated to an evolving set of parameters that could expand and contract in correlation to varied spatial needs simultaneously within one organic form. Kiesler did not forgo traditional means and methods of producing complex spatial programs.

Kiesler's studies throughout his lifetime marked his interest in the vital forms, media technologies, and adaptable building systems that hoped to achieve elastic spatial conditions. Although invariably static in their built form—he hoped to create building environments that proved spatially open, physically seductive, and visually dynamic. His practices aimed to respond to changes in environmental conditions with the natural flexibility that only appears in forms of organic life. Architecture however, unlike nature cannot really bend, grow, or evolve its form on its own; elasticity provided more a guiding principle, than any real possibility to construct and assemble buildings as if they could respond to their surroundings. 20th century desire to create elastic spaces was perhaps more informative of latent modern drives, human conflicts, and ambitions than it ever really produced viable tectonic solutions. It was an ambitious project, which challenged normative building practices, and set a surprising precedent for future generations to follow.

APPENDIX 1

On Correalism and Biotechnique," 1938, most complete unpublished manuscript, 1-95, Design Correlation Manuscript Box, As held in the Austrian Frederick and Lillian Kiesler Private Foundation Archive, Vienna. Kiesler had predominantly worked on the first three chapters.

Chapter 1: Man as a Nucleus of Forces, pages 1-18.

The subject of a lecture presented at the *Symposium on Science and Design* held by the Alumnae Association of MIT, June 6 1938. The first chapter posed design as a relative field of forces.

Chapter 2: Functional Design Becomes Obsolete Through the Biotechnical Approach, pp. 18-33.

This chapter described Kiesler's theory of Biotechnique in light of the failures of modern functionalism.

Chapter 3: Hereditary in Technology, pp. 34-48.

In this chapter, Kiesler described his theory of Biotechnique and its relevance to societal practices in the manufacture of tools and technology.

Chapter 4: Art, Technology & Housing, pp. 49-52.

This chapter briefly described a historical transition from an art as easel painting towards an art of technology in the practice of building design.

Chapter 5: The Nature of the Tool, pp. 53-62.

Chapter comprised Kiesler's theories on building construction.

Chapter 6: Maintenance and Management, pp. 63-68.

Chapter comprised Kiesler's theories on building construction related to Time Zoning.

Chapter 7: Continuous Construction, pp.69-74.

Chapter defined Kiesler's innovative structural ideas.

Chapter 8: Work, Leisure, and Fatigue, pp. 75-79.

Chapter developed the relationship between architecture and its relationship to the physiological and psychological needs of dwelling

Chapter 9: New Terminology of Tool-Production, pp. 81-88

Alongside Chapter 10, the chapter summarized Kiesler's theories on standardization and variation in the production of architecture as a tool for social heredity—as a supplement to natural selection.

Chapter 10: Correlative Re-Integration of Tool Production, pp. 89-95.

APPENDIX 2

Student Work/Plates, Laboratory of Design Correlation Files, 1937-1941, REC 07 Box
As held in the Austrian Frederick and Lillian Kiesler Private Foundation Archive, Vienna

Box Folder 2 (and loose) Fatigue Measurement

Photostat 1

Fatigue Measurement – Bioelectric methods (Morphology)
Motor nerve cell, its nerve fiber and tow motor-end-plates.

Photostat 2

Fatigue Measurement – Bioelectric methods: (Morphology)
Reflex arc.

Photostat 3

Fatigue Measurement – bioelectric methods: (Morphology)
1794 – Galvani discovered that electrical currents can be obtained from living tissues.
Demonstration of “Contraction without metals”:
If the nerve of a sensitive muscle nerve preparation (a) be allowed to fall on an excised muscle (b) so that one point of the nerve is in contact with the cut end and one with the surface of the second muscle (b), the muscle (a) will contract each time the nerve touches (b) so as to complete the circuit.

Photostat 4

Fatigue Measurement – bioelectric methods: (Morphology)
1879 – Hermann
Suggested that current of action at any stimulated spot excites the adjacent segments or molecules, causing them to become negative and thus setting up a current of section which in turn excites the succeeding segments. (depolarization theory of nerve impulse).

Photostat 5

Fatigue Measurement - Bioelectric methods: (Morphology)
1890- Ostwald
Membrane potential theory set forth to explain electrical phenomenon of living tissues.
Due to polarized membrane (surfaces of cells) having positive charge on one surface, usually the outer one, and a negative charge on the other surface.

Photostat 6

Fatigue Measurement – Bioelectric methods: (Morphology)
(Development of membrane potential theory of Oswald to show the origin of bioelectric potentials in living cells. The double line around the cell indicates a polarized membrane; the single line (lowest figure), a depolarized one.

Photostat 7

Fatigue Measurement – Bioelectric methods: (Morphology)
(See page 175, fig. 88 Starling) (Morphology)
1901- Einthoven devised string galvanometer to measure bioelectric current. (A delicate thread of silvered quartz or platinum is stretched between the poles of a strong magnet.

The poles are pierced by holes so that the thread may be illumined by an electric light from one side, and from the other a magnified image of the thread may be thrown on a screen. Whenever current passes through the thread it moves laterally, which movement may be photographed on a moving plate.

Photostat 8

Fatigue Measurement – Bioelectric methods: Morphology)

1912- Capillary electrometer devised by Hofmann

An Instrument for measuring and recording difference of potential. Capillary tube shown in Photostat is on the path of a beam of light which enters at B. The magnified image of the meniscus in the capillary is projected by microscope on to a view or moving photographic plate. Capillary electrometer detail: Consists of glass tube drawn out to a fine capillary point. This tube filled with mercury. Point dips into wide tube containing dilute sulphuric acid, at the bottom of which a little mercury. Two platinum wires fused into glass and dipping into mercury serve as terminals. The meniscus of the mercury in capillary at its junction with acid is observed under microscope, or a magnified image is thrown on a screen with aid of an electric arc. If now the capillary and acid be connected with two points, it will be observed that any difference in the potential of these two points causes a movement of the meniscus in the direction in which the current is flowing, and the extent of the excursion is proportional to the difference of potential. Excursions lend themselves well to photography, so that every electrical variation may be graphically recorded, its extent and its time relations being recorded.

Photostat 9

Fatigue Measurement – Bioelectric methods: Morphology

1928 – Matthews: Mechanical oscillograph (galvanometer with strong field resembling a loud speaker, the plate being replaced by an iron tongue to which a smaller mirror is attached. The current to be recorded is amplified appropriately by means of valves. A beam of light is reflected from the mirror, the movements of which can be photographically recorded. (See A-B-C) Diphasic and Monophasic Potential Waves: Electrical investigation revealed that excitation at a given point arouses an electrical charge which passes down the muscle at the same rate as the mechanical (contractual) change, which it slightly proceeds. A diaphasic change is thus also a sign of propagated change. Every excitation of a normal muscle gives use to apdiphasic variation of such a direction that the point stimulated first becomes negative to all other points of the muscle, and this “negativity” passes a wave down the muscle, preceding the wave of contraction and traveling at the same rate, Lower left: Diphasic Variation of uninjured muscle recorded by oscillograph. Lower right: Diphasic action potentials in gastrocnemius of frog recorded by oscillograph. Oscillograph detail (mechanical) devised by Matthews, resembles a loud-speaker, the plate being replaced by an iron tongue to which a small mirror is attached.

Photostat 10

Fatigue Measurement – Bioelectric methods (Morphology)

1928 - Bogue, J.Y. (p. 177)

Used cathode ray oscillograph to record Diphasic and Monphasic action potentials. Records of Diphasic (left) and Monophasic (right) action potentials in non-medullated nerve of Naia, as obtained by Bogue.

Photostat 11

Fatigue Measurement – Bioelectric methods (Morphology)

1928 – Muscular contraction and relaxation.

Photostat 12

Fatigue Measurement – Bioelectric Methods: (Morphology)

During complete relaxation of a muscle being tested electrically, the shadow of the recording wire is practically quiet. At the photographic film moves (left to right) the only variations seen are the slight constant ones (arising in the instrument) and pulse beats (two shown here). Top Tenseness in the muscle is disclosed here. Marked vibrations of the shadow produce these long approximately vertical lines, the length of which depends upon the voltages in the muscle. These voltages vary with the degree in which it is contracting. Thus we are now able to measure electrically, with the aid of moving picture, activity or relaxation in human nerve or muscle. After the record here shown was taken, the subject continued to lie apparently motionless; but she became tense, as shown by frequent movements of the wire shadow. These movements were so great that it was necessary to turn a dial, rendering the instrument about one-tenth as sensitive, in order to register the full length of the vertical lines on the photograph. In this record, each millimeter of length in a vertical line indicates about three-millionths of a volt.) Bottom.

Photostat 13

Fatigue Measurement - Bioelectric Methods: (Morphology)

1938 – Polyelectrophysiograph

With the use of suitable microphones and the high gain and power amplifiers connected with the cathode ray oscillograph units of the loud speaker, it is possible to study the auditory phenomenon either by listening to the sound or by observing the wave form exhibited by the cathode ray tube screens. Thus, the instrument is suited for the study of sounds of various types such as the voice, heart sounds, muscle tones, breath sounds, etc. It may be used to demonstrate such phenomena as pitch, timber, beats, etc. and it is possible to analyze the wave forms into the various fundamental tones and associated harmonics. Concerning its use as an instrument for the study of biological action potentials it may be employed to observe, hear or record an action current of any frequency extending over a wide range (from a single impulse to 75,000 oscillations per second). The action currents with which we are customarily concerned are those produced by the hear, by skeletal muscles and by nervous tissues, either peripheral or central. Consequently, the instrument may be employed to record electrocardiograms, electromyograms, eletroneurograms, and electroencephalograms. At present our optical recording system is not entirely satisfactory so that accurate quantitative measurements can be made, however, we are developing a camera and timing device which will enable us to make accurate photographs of wave forms of various electrical frequencies which may be quantitatively evaluated. (page 2) The cathode ray oscillograph tubes are arranged in parallel with the amplifiers so that it is possible to use either the slow screen tube or the fact screen tube at will by merely turning a suitable switch on the panel. The slow screen tube is used for observing low frequency oscillating phenomena, such as the action currents picked up from the heart of the brain...

Box Folder 3 Energy Balance Methods (Measurements)

Photostat 1

Energy Balance (Morphology)

1905 Respiration Calorimeter by Benedict and Fox

Consists of a chamber with pipes so contrived that all heat produced by man or animal is communicated to the water flowing through the pipes. From the measure of heat production, the energy expenditure may be computed.

Photostat 2

Energy Balance (Morphology)

1925 – Oxycalorimeter developed by Benedict and Fox for a computation of energy values of foods, foodstuffs and excreter. The heat value of a foodstuff as a result of combustion within this apparatus determines the energy value of that particular foodstuff.

Photostat 3

Energy Balance (Morphology)

1925 – Chart by Fox and Benedict of relative energy values of common foodstuffs based on combustion in oxycalorimeter

Box Folder 4 Exchange of Matter by Respiratory Methods

Photostat 1

Morphology Exchange of Matter Respiratory Exchange

1892 – Method of Haldane, by which intake of oxygen by small animals is determined indirectly. Since the animal gives off carbon dioxide during its stay in chamber. (c), its loss of weight, subtracted from total weight of carbon dioxide and water represents weight of oxygen absorbed.

Photostat 2

Not Found

Photostat 3

Morphology Exchange of Matter Respiratory Exchange

Application of Douglas Bag and two variations

Photostat 4

Morphology Respiratory Exchange

1918 – Benedict's Respiration apparatus, a closed system containing a given volume of air. Caustic alkali absorbs the carbon dioxide, which is afterward weighed and compared with the known amount of oxygen introduced into system.

Photostat 5

Morphology Respiratory Exchange

1922 – Recording Spirometer by Krogh graphically records the rate and amount of oxygen consumed.

APPENDIX 3

Frederick Kiesler, *Magic Architecture: The Story of Human Housing*, most complete version, unpublished, undated. As held in the Austrian Frederick and Lillian Kiesler Private Foundation Archive, Vienna. The book is broken into ten major parts, each with introductions and varied chapters.

- Part 1 The Eternal Preamble to Architecture
 - Introduction: Living Unity in Architecture
 - Chapter 1: Eternal Preamble to Architecture
 - Chapter 2: Fear of the Unseen
 - Chapter 3: The Enigma of Death
 - Chapter 4: The Enigma of Birth
 - Chapter 5: Birth Necessitates Shelter; Death Inspires Architecture
 - Chapter 6: The Cave, First Natural Shelter
 - Chapter 7: The Nest, First Artificial Shelter
 - Chapter 8: The Universal Architecture
 - Chapter 9: The Split in the Unity of Vision and Fact

- Part 2 Animal Architecture and Man's Ability to Build
 - Introduction Instinct, Memory and the Drive for Invention
 - Chapter 1: Man's House is Animal-Architecture
 - Chapter 2: The Building – Instinct of Animals: The Termitery of Termites
 - Chapter 3: Animal Engineering: The Dam of the Beaver
 - Chapter 4: The Building Tools of Animals
 - Chapter 5: Man a Composite Animal of Building Techniques
 - Chapter 6: Man's First Inventions
 - Chapter 7: The Second Transformation of Dead Material into Magic Tools...
 - Chapter 8: The Third Transformation of Dead Materials into Magic Tools...

- Part 3 Awareness of the Miraculous
 - Introduction From Animal Housing to Magic Architecture
 - Chapter 1: The Birth of Magic Design
 - Chapter 2: Man discovers that the finger of his hand are magic wands...
 - Chapter 3: Man discovers that by making grooves (engravings)...
 - Chapter 4: Discovery and Affirmation of the Superfluous

- Part 4 Art and the Unknown
 - Introduction The Superfluous becomes a Necessity
 - Chapter 1: The meaning of Magic
 - Chapter 2: Man Part of the Cosmos and Man apart from the Cosmos
 - Chapter 3: [blank]
 - Chapter 4: Myth and Magic
 - Chapter 5: The Psyche-Plastic-Era
 - Chapter 6: The Ideo-Plastic-Era
 - Chapter 7: The Era of Metamorphosis
 - Chapter 8: The Era of Abstraction
 - Chapter 9: The Physic-Plastic Form

- Part 5 Slums of the Body: Dream-Architecture for Rituals
 - Introduction Worship
 - Chapter 1: The Split in Vision and Fact Standardized
 - Chapter 2: Egyptian Pyramid and Town
 - Chapter 3: Aztec Pyramid and Dwelling
 - Chapter 4: Indian Temple and Street
 - Chapter 5: Parthenon and House

- Chapter 6: Gothic Cathedral and Town
 - Chapter 7: Hagia Sophia and Houses
 - Chapter 8: Skyscraper and Street
 - Chapter 9: Cathedral and the Holy Grail
 - Chapter 10: The Gothic Arch
- Part 6 Painters as Dream – Architects
- Introduction: Construction without Chairs
 - Chapter 1: Durer's Super-Arch of Triumph
 - Chapter 2: Da Vinci: Concept of the Cathedral
 - Chapter 3: Michelangelo: Concept of St. Peter
 - Chapter 4: Brueghel's Tower of Babel
 - Chapter 5: Hieronymus de Bosch's Houses
 - Chapter 6: El Greco's Toledo
 - Chapter 7: Raffael's Garden's
 - Chapter 8: The Religions Development of the Roman Empire
- Part 7 Magic Architecture
- Introduction Towards Magic Architecture
 - Chapter 1: Mount Athos
 - Chapter 2: Sforzinda
 - Chapter 3: The City of the Sun
- Part 8 Realism of Wealth
- Introduction Fashion in Architecture
 - Chapter 1: Lust in Stone
 - Chapter 2: The Rococo in France
- Part 9 The Poet's Architecture
- Introduction: Castles in the Ark
 - Chapter 1: Mozart's House
 - Chapter 2: An interior by Huysmans
 - Chapter 3: Glass Architecture by Paul Scheerbart
 - Chapter 4: The Building by Franz Kafka
- Part 10 Flares of a New Unity of Vision and Fact
- Introduction: Socio Architectural Utopias and the Reality of Industry
 - Chapter 1: Fourier's "Ideal Phalanx"
 - Chapter 2: "Cities of a New Globe" by Bruno Taut
 - Chapter 3: Reaction: Back to Classification
 - Chapter 4: Magic in Steel: The Eiffel Tower
 - Chapter 5: The City in Space
 - Chapter 6: The Double – Personality of the Skyscraper
 - Chapter 7: Reaction Back to Handcraft
 - Chapter 8: The Hygiene of Functional Architecture
 - Chapter 9: Flight into the Dream World of Surrealism (Art without Architecture)
 - Chapter 10: The 20th Century Second Quarter: Towards a New Reality
- Part 10 Epilogue and Prologue
- Introduction: Man's Shelter Becomes Magic Architecture
 - Section One: As to Facts
 - Section Two: As to Materials and Mechanics
 - Section Three: As to Design
 - Section Four: As to Equipment
 - Section Five: Science and Architecture
 - Appendix: Metabolism-Chart of the Mobile Home Library

Selected Bibliography

Essays, Books, Exhibition Catalogues, Articles, and Reviews on Frederick Kiesler

- 1) Ades, Dawn. *Dada and Surrealism Revisited*. Arts Council of Great Britain, 1978.
- 2) "American opera designs." *Architectural Forum*, vol. 76 (Jan., 1942): 14, 16.
- 3) "And Now It's the Space House: Latest Thing in Dwelling Likely to Leave You Gasping With Surprise," *New York Sun*, 14.
- 4) *Annual of American Design, 1931*. New York: Ives Washburn, 1931.
- 5) Anthology Film Archives; Avantgarde Film Preservation Program. *A Tribute to Anthology Film Archives': Avantgarde film preservation program. An evening dedicated to Frederick Kiesler*. New York: Anthology Film Archives, 1977. [OCLC: 3824040 WorldCat]
- 6) "The Architecture League's 63rd Gold Medal Exhibition." *Interiors*, CXXV (Dec. 1965): 102-103.
- 7) Arnason, H.H. *History of Modern Art*. Englewood Cliffs: Prentice Hall, 1969.
- 8) Arp, Jean. "Das Ei Kieslers und Seine Salledes Superstitutions." *In Onze Peintres vus par Arp*. Zurich: Editions Girsberger, 1949.
- 9) Arp, Jean. *Onze peintres: Taeuber, Kandinsky, Leuppi, Vordemberge, Arp, Delaunay, Schwitters, Kiesler, Morris, Magnelli, Ernst*. Zurich: Girsberger, 1949. [OCLC: 3591818 WorldCat]
- 10) Arp, Jean. "L'Oeuf de Kiesler et la Salle des Superstitutions." *Cahiers d'Art*, XXII (June, 1947): 291.
- 11) "Art in Orbit." *The Nation* 11 (11 May 1964).
- 12) "Art of the Century." *Vogue*, 1 January 1943, 42-43.
- 13) Ashton, Dore. "Art." *Arts and Architecture*, LXXVIII (March 1961): 7.
- 14) Ashton, Dore. "Kiesler at Castelli." *Arts and Architecture* 78 (March 1951): 7.
- 15) Ashton, Dore. *The New York School: A Cultural Reckoning*. New York: Viking Press, 1972, 1973.
- 16) "Award of Merit: Frederick Kiesler and Armand Bartos." *Journal of the American Institute of Architects*, XXXVI (July 1966): 40-41.
- 17) Baljeu, Joost (ed.). *Theo van Doesburg*. London: Studio Vista, 1974.
- 18) Banham, Reyner. *Theory of Design in the First Machine Age*. New York: Frederick Praeger, 1960.
- 19) Barr, Alfred (ed.). *Cubism and Abstract Art*. New York: Museum of Modern Art, 1936.
- 20) Barr, Alfred. "Kiesler's Galaxy." *Harper's Bazaar*. LXXXVI (April 1952): 142-143.

- 21) Barbey, Gilles; Gubler, Jacques. "Frederick Kiesler et la problématique du "Contemporary art applied to the store and its display." *Werk*, n. 11, v. 59 (Nov., 1972): 662-666.
- 22) Baybrook, Susan. "Kiesler the Man and His Vision." *Architectural Record* 141 (April 1967): 340.
- 23) Benson, Eugene. "Wanted: An American Bauhaus." *American Magazine of Art*, XXVII (June, 1934): 307-310.
- 24) Béret, Chantal, ed. *Frederick Kiesler, artiste-architecte*. Paris: Centre Georges Pompidou, 1996.
- 25) Berkel, Ben van. "Hybridisation: Kohärente Strukturen des Disparaten = Hybridation: l'unité de ce qui est disparate." *Archithese*, n. 3, v. 30 (May-June, 2000): 18-19.
- 26) Berkel, Ben van; Bos, Caroline. "Über die Fähigkeit, das Endlose zu fassen." *Arch Plus*, n.138 (Oct. 1997): 62-66,98-99.
- 27) Berkel, Ben van; Bos, Caroline. "Una capacidad para lo interminable = A capacity for endlessness." *Quaderns d'arquitectura i Urbanisme*, n.222 (1999): 92- 95.
- 28) "Beyond the Horizon." *Time*, LX (Sept. 15, 1952): 68.
- 29) Blauensteiner, Charlotte. "Friedrich Kiesler: Die Einkreisung des Endlosen: Architektur als Lebensutopie." *Architektur & Bauforum*, n.186 (Jan.-Feb. 1997): 46-48.
- 30) "Bloodflames at Autobahn." *Vogue*, 15 April 1947, 136-137.
- 31) Boekl, Matthias. "Friedrich Kiesler (1890-1965): architettura visionaria [exhibition review]." *Domus*, n.694 (May 1988): 56-59.
- 32) Bogner, Dieter. "Denkräume, Kunsträume, Lebensräume." *Neue bildende Kunst*, n. 5, v. 7 (1997): 60-63.
- 33) Bogner, Dieter. "En el interior de la Endless House = Inside the Endless House." *Quaderns d'arquitectura i urbanisme*, n.222 (1999): 100-105.
- 34) Bogner, Dieter. "Frederick Kiesler artista-architetto = Frederick Kiesler artist-architect [exhibition review]." *Domus*, n.788 (Dec. 1996): 57-60.
- 35) Bogner, Dieter. *Friedrich Kiesler: Architekt, Maler, Bildhauer, 1890-1965 /Frederick Kiesler*. Wien: Löcker, 1988.
- 36) Bogner, Dieter; Noever, Peter, eds. *Frederick J. Kiesler: Endless Space*. Ostfildern-Ruit: Hatje Cantz Publishers, 2001. 9 [ISBN: 3-7757-1047-7 RLG]
- 37) Bogner, Dieter. *Friedrich Kiesler, 1890-1965: inside the endless house*. Wien: Böhlau, 1997.
- 38) Bogner, Dieter. "Friedrich Kiesler's Manifeste du corréalisme." *Daidalos*, n.69-70 (Dec. 1998 – Jan. 1999): 142-151.
- 39) Bogner, Dieter. "Wien 1920-1930: Es War als Wurde Utopia Relitat Werden." *Alte und Modern Kunst*, Heft 190/191 (Wien 1983): 35-48.

- 40) "Book Reviews: Review of *Contemporary Art Applied to the Store and its Display* by Frederick Kiesler." *Architectural Forum*, LII (March 1939): 64.
- 41) "Book Reviews: Review of *Contemporary Art Applied to the Store and its Display* by Frederick Kiesler." *Architectural Forum*, LXX (August 1930): sup. 32.
- 42) Boswell, Peyton. "Art of This Century." *Art Digest*, XVII (Nov. 1, 1942): 3.
- 43) Bottero, Maria, *Frederick Kiesler: Arte Architettura Ambiente*. Milano: L Electra, 1996.
- 44) Bottero, Maria. *Frederick Kiesler: l'infinito come progetto*. Torino: Testo & immagine, 1999.
- 45) Bowman, Ruth. *Murals without walls: Arshile Gorky's aviation murals rediscovered*. Newark, N.J.: Newark Museum, 1978.
- 46) Braham, William. "Correalism and Equipoise: observations on the sustainable." *Arq: Architectural Research Quarterly*, n.1, v.3 (1999): 57-63.
- 47) Braham, William W., "What's Hecuba to Him? On Kiesler and the Knot," *Assemblage* 36, ed. Michael Hays, August 1998.
- 48) Brian, Doris. "Dealers help Artists Help Themselves." *Art Digest*, XXV (Oct. 1, 1950): 11.
- 49) Breit, Harvey. "The Poet's Theater." *New York Times*, 9 February 1947.
- 50) Breton, André. *Ode à Charles Fourier / André Breton*. Paris: Fontaine, 1947.
- 51) "Buildings in the News." *Architectural Record*, June 1965, 29.
- 52) Bull, Harry Adsit. "Review of the *Contemporary Art Applied to the Store and its Display* by Frederick Kiesler." *International Studio*, LXXXVII (December 1930): 83-84.
- 53) Bullock, Nicholas. "The Looshaus on the Michaelerplatz: Craftsmanship and Tradition." *9H*, no. 6 (1983):17.
- 54) Cabanne, Pierre. *Dialogue with Marcel Duchamp: The Documents of 20th Century Art*. New York: Viking Press, 1971.
- 55) Calas, Nicolas. *Bloodflames 1947*. [Exhibition cat.] New York: Hugo Gallery, 1941.
- 56) Canaday, John. "Art: Kiesler's Sculpture." *New York Times*. May 16, 1964.
- 57) Campbell, Lawrence. "Reviews and Previews...Frederick Kiesler." *Art News*, 59 (Feb. 1961): 10.
- 58) Carlos, John. "Frederick J. Kiesler." *Architectural and Engineering News*. 1961 Feb., v. 3, 48-49.
- 59) "Catalog of 20th-century architectural models." *Kenchiku Bunka*, n. 655, v. 56 (Oct. 2001): 21-90.
- 60) Cheney, Sheldon. *Arts and the Machine*. New York: McGraw Hill, 1936.
- 61) Cheney, Sheldon. *Expressionism in Art*. New York: Liveright Publishing Co., 1934.

- 62) Cheney, Sheldon. *The New World of Architecture*. London: Longmans, Green and Co., 1930.
- 63) Cheney, Sheldon. "The International Theater Exhibition." *Theater Arts Monthly*, March 1926.
- 64) Cheney, Sheldon. *Stage Decoration*. New York: Benjamin Blom, 1966.
- 65) Cheney, Sheldon. *The Story of Modern Art*. New York: McGraw-Hill, 1938.
- 66) Clurman, Harold. "Eight ideal theaters." *Industrial Design*. April 1962. v. 9. 40-47.
- 67) Coates, Robert. "The Art Galleries: Fast Start." *The New Yorker*, XXX (Oct. 16, 1954): 74-76.
- 68) Cohl, Alan. "Meaning and Myth: the Architecture of the Shrine of the Book [exhibition review]." *Architecture of Israel: AI*, n. 31 (Autumn, 1997): 67-74.
- 69) Colomina, Beatriz. "De psyche van het bouwen: Frederick Kiesler's Space House," *Archis*, n. 11 (Nov. 1996): 70-80.
- 70) Colomina, Beatriz. "Krankheit als Metapher in der modernen Architektur = The medical body in modern architecture." *Daidalos*, n. 64 (June 1997): 60-71.
- 71) Connolly, Cyril. "Surrealism." *Art News Annual*, XXI (1952): 131-159.
- 72) Connolly, Denis. "Rewriting the history of Modernism [exhibition review]." *Architects' Journal*, n. 3, v. 204 (July 18, 1996): 45.
- 73) Conrad, Ulrich, ed. *Programs and Manifestoes on 20th-Century Architecture*. Tr. Michael Bullock. Cambridge, Mass., London: MIT Press, 1971.
- 74) Conrads, Elrich; Sperlich, Hans. *The Architecture of Fantasy*. New York: Frederick Praeger, 1962.
- 75) "Contemporary Art Applied to Store and its Display." *Architectural Forum* 70 (March 1959): 64.
- 76) Corbett, Harvely Wiley. "Industrial Design and the Architect." *The Architectural Record* 77 (April 1953): 234.
- 77) Craig, Edward Gordon. *Towards a New Theater*. London, Toronto: J. M. & Dent & Sons, 1913.
- 78) Creighton, Thomas. "Theater Design: January 27-March 24." *Craft Horizons*, XXII (March-April 1962): 38-39.
- 79) Czaplicka, John, *Emigrants and exiles: a lost generation of Austrian artists in America, 1920-1950 = Emigranten und Verbannte: eine verlorene Generation österreichischer Künstler in Amerika, 1920-1950*. Evanston, IL: Mary and Leigh Block Gallery, Northwestern University; Vienna: Österreichische Galerie, 1996.
- 80) Dalibor, Veseley. "Surrealism and Architecture," *Architectural Design*, v. 48, nos. 2-3. (1978): 94.

- 81) Davidson, Abraham. *Early American Modernist Painting 1910-1935*. Icon Editions. New York: Harper & Row, 1981.
- 82) "Dead Sea Scrolls 'Shine' Opened," *The Israel Digest*, Vol III. No. 9. (April 23, 1965): 2.
- 83) "Debacle of Theater," *Little Review* (special issue), March 1926.
- 84) "Dedication of Lotus 3 to the memory of Frederick J. Kiesler." *Lotus*, v. 3 (1966-1967): 9.
- 85) DeGaetani, Thomas. "A Theater Flexible and Spacious." *Rev. of The Theater of the Bauhaus. Progressive Architecture*, February 1962, 166.
- 86) De Kooning, Elaine. "The Modern Museum's Fifteen: Dickinson and Kiesler," *Art News*, LI (April 1052): 20-23, 66-67.
- 87) Demos, T.J. , "First Papers of Surrealism, 1942," *October*, Vol 97 (Summer, 2001) 91-119, reprinted and revised in T.J. Demos, *The Exiles of Marcel Duchamp*, Cambridge: MIT Press, 2007.
- 88) Dessauce, Marc. *Machinations : essai sur Frederick Kiesler : l'histoire de l'architecture moderne aux Etats-Unis : et Marcel Duchamp / Marc Dessauce*. Paris : Sens & Tonka, 1996.
- 89) DeStijl: 1917-1931—*Visions of Utopia*. Jaffe. Ed. Mildred Friedman. Oxford: Paidon, 1982.
- 90) D'Harmoncourt, Anne; McShine, Kynaston, eds. *Marcel Duchamp*. New York: The Museum of Modern Art; Philadelphia: Philadelphia Museum of Art, 1973.
- 91) *Die Kunst des Zerreißens: Hans Arp, Georg Baselitz, Gaston Chaissac, John Chamberlain, Raymond Hains, Raoul Hausmann, Asger Jorn, Ellsworth Kelly, Frederick Kiesler, Robert Rauschenberg, Mimmo Rotella, Kurt Schwitters, Nicolas de Stael*. Rolandseck: Stiftung Hans Ar #, 1998. [OCLC: 40933576 WorldCat]
- 92) Dreier, Katherine S.; Echaurren, Matta. "Duchamp's Glass, La Mariee mise a nu par ses celibataires, meme, an Analytical Reflection." *In Marcel Duchamp in Perspective*. Ed. Joseph Masheck. Englewood Cliffs: Prentice-Hall, 1945.
- 93) Drexler, Arthur. "Frederick Kiesler and his Endless House." *Vogue*, CXXXV (Jan. 1, 1960): 114, 163.
- 94) Drexler, Arthur. "Notes for Exhibit 'Visionary Architecture'." New York: Museum of Modern Art, 1968.
- 95) Dumont, Marie-Jeanne. "Kiesler, retour d'Amérique [exhibition review]." *Architecture d'aujourd'hui*, n. 306 (Sept. 1996): 26.
- 96) Dunnett, James. "The mystery man: Frederick Kiesler and his avant-garde [exhibition review]." *Architects' Journal*, n. 22, v. 190 (Nov., 1989): 88-89.
- 97) Eaton, Leonard. "The Naïve Cynic," *Progressive Architecture*, XXXXVIII (Sept. 1967): 184, 189.
- 98) "Empty Altars." *Newsweek*, LXIII (May 18, 1964): 62. "Endless Cave in Jerusalem." *Time*, LXXXV (April 30, 1965): 82-84.
- 99) "The Endless House." *Architectural Forum*, v. 95 (Nov. 1950): 124-126.

- 100) "The Endless House." CBS Television: "Camera Three." March 20, 1960.
- 101) "The Endless Search." *Newsweek*. Jan. 10, 1966. 62.
- 102) "Endless Sculpture." *Time*, LXXXIII (May 15, 1964): 86.
- 103) Englemann, Paul. *Letters from Ludwig Wittgenstein with a Memoir*. New York: Horizon Press, 1968.
- 104) "Environmental Sculpture by Frederick Kiesler." *Architectural Forum*, CXXI (July, 1964): 118.
- 105) Ephron, Nora. "Avant-Garde Rites for a Daring Man." *New York Post*, Dec. 30, 1965.
- 106) Ernst, Jimmy. *Not So Still Life, a Memoir by Jimmy Ernst*. New York: St Martin's Marck Book, 1984.
- 107) Eustice, Morton. "A Universal Theater: Frederick Kiesler's All-Purpose Community Playhouse." *Theater Arts Monthly*, XVII (June 1933): 447-457.
- 108) Farber, Manny. "A New Way of Seeing Pictures." *Magazine of Art*, XXXV (Dec. 1942):295, 305, 308.
- 109) Fernández-Galiano, Luis. "Esculturas habitadas: el retorno de Frederick Kiesler [exhibition review]." *Arquitectura Viva*, n. 52 (Jan.-Feb. 1997): 65-67.
- 110) Feuerstein, Gunther; Bundesministerium für Wissenschaft und Forschung. *Transparent*. [Wien: Bundesministerium für Wissenschaft und Forschung] Jahrgang 19, 1/2 (1988) Whitney has: Jahrg. 15, 1984, 3/4 (special issue on Kiesler) Location: Whitney Museum of American Art. S N6537.K5 T6 (Record ID: NYWA89-S17)
- 111) Feuerstein, Günther. "Kieslers Rollendom = Kiesler's Dome of the Scrolls." *Daidalos*, n.53 (Sept.15, 1994): 124-133.
- 112) Fijalkowski, Krzysztof. "Un Salon au fond d' un lac': The domestic spaces of surrealism," in *Surrealism and Architecture*, ed. Thomas Mical. London: Routledge Press, 2004.
- 113) Fitch, James Marston. *American Building: The Forces That Shape It*. Boston: Houghton Mifflin, 1947.
- 114) Fitch, James. "Outrageous Fortune," Review of *Inside the Endless House* by Frederick Kiesler." *New York Times Book Review* (Jan. 15, 1967): 30.
- 115) Flammer, Janet. "Letter from Paris." *The New Yorker*, 6 September 1947.
- 116) "Flowing Gallery." *Time*, LXXIX (February 4, 1957): 60.
- 117) Ford, Charles Henri; Duchamp, Marcel; Kiesler, Frederick; Breton, André. *View. Marcel Duchamp number, series V, no. 1 (March 1945). Elaine Lustig Cohen Dada Collection; 83*. New York: View, Inc., 1945. [New York Public Library. NYP6 Spencer Coll. Amer. 1945 01-488]
- 118) "Form is Language." *Art News*, LIX (April 1960): 35.
- 119) "Frederick Kielser." *Aujourd'hui: Art et Architecture*, IX (Mai, 1966): 30-37.

- 120) "F. J. Kiesler Dies: Daring Architect." *New York Times*, Dec. 28, 1965.
- 121) "Friedrich Kiesler (1890-1965): il visionario (o lo sperimentatore?), Vienna, Museo del XX secolo, 25 aprile-19 giugno 1988 [exhibition review]." *Abitare*, n. 269 (Nov. 1988): 218-223.
- 122) "Frederick Kiesler: sculpture and a grotto." *Contract Interiors*, n. 11, v. 125 (June 1966): 14.
- 123) "Frederick Kiesler's Theater Projecte." *Bauen und Wohnen*, XI (1951): 2-4.
- 124) "Frederick J. Kiesler: un modo lieto di morire." *Architettura: cronache e storia*, n. 127, v. 12 (May 1966): 5.
- 125) "Frederick Kiesler." *Zodiac*, n. 19 (1969): 6-49.
- 126) *Frederick Kiesler*. Rotterdam: Witte de With, center for contemporary art (Düsseldorf: Richter Verlag, 1997) Witte de With, cahier. #6 (July 1997) several articles published in conjunction with an exhibition at Witte de With from Nov. 23, 1996-Jan. 12, 1997.
- 127) *Friedrich Kiesler Designer: Seating furniture of the 30s and 40s*, ed. Austrian Frederick and Lillian Kiesler Private Foundation. Ostfildern-Ruit: Hatje Cantz Verlag, 2005.
- 128) *G: Zeitschrift für elementare Gestaltung*, ed. Graff, Kiesler, Mies v.d. Rohe, Richter. Nr. 3 (June, 1924).
- 129) "Galaxy, New Art Form, Veers into View." *New York Times*, Sept. 29, 1954.
- 130) Galerie Michael Pabst. *Frederick Kiesler: Architektur der Zukunft: [Ausstellung]*, Galerie Pabst. München: Galerie Michael Pabst, 1978. [OCLC: 18028771 WorldCat]
- 131) Galerie nächst St. Stephan. *Frederick Kiesler: Architekt, Maler, Bildhauer, Schriftsteller, Bühnenbildner, Designer / organisation, herausgeber und veleger, Galerie nächst St. Stephan*. (Wien: Galerie nächst St. Stephan, 1975)
- 132) Gendel, Milton; Kraus, Eva; Sonzogni, Valentina. *Friedrich Kiesler: art of this century; [anlässlich der Ausstellung "Art of This Century" (2002/2003) im MMK - Museum für Kunst Frankfurt am Main]*. Ostfildern: Hatje Cantz, 2002.
- 133) Giovannini, Joseph. "Questions of plagiarism upstage Kiesler show [exhibition review]." *Architecture*, n. 9, v. 85 (Sept. 1996): 42-43.
- 134) Gijsberts, Peter Jan. "Die Kulisse explodiert: Friedrich Kieslers Theaterexperimente und Architekturprojekte 1923-1925 [by] Barbara Lesák [book review]." *Archis*, no. 5 (May, 1989): 51-52.
- 135) Glueck, Grace. "Like a Beginning...New York Gallery Notes." *Art in America*, LVII (May-June, 1969): 116-117.
- 136) Goldberg, RoseLee. "Frederick Kiesler, endless love." *Flash Art* 102 (Mar-Apr 1981): 37-38.
- 137) Goldfeld, Abraham. *Toward Fuller Living Theory: Public Housing and Leisure Time Activities*. New York: National Public Housing Conference, 1934.
- 138) Gollin, Jane. "Review of Kiesler's Show at Martha Jackson Gallery." *Art News*, LXV (May 1966): 18.

- 139) Goodman, Cynthia. "The current of contemporary history; Frederick Kiesler's endless search." *Arts Magazine* 54 (Sept 1979): 118-123.
- 140) Goodman, Cynthia. "Frederick Kiesler; designs for Peggy Guggenheim's Art of This Century Gallery." *Arts Magazine* LI/10 (June 1977): 90-95.
- 141) Goodman, Cynthia. *Frederick Kiesler (1890-1965): visionary architecture, drawings and models, galaxies and paintings, sculpture, December 9-January 3, 1979*. New York: André Emmerich Gallery, 1978. [OCLC: 4672522 WorldCat]
- 142) Gough-Cooper, Jennifer and Jaques Caumont, "Frederick Kiesler and the Bride Stripped Bare," *Frederick Kiesler 1890-1965*, ed. Yehuda Safran. London: Architectural Association, 1989.
- 143) "Grant Given to Museum for Architectural Project," News Release No. 14, Museum of Modern Art, August 25, 1952.
- 144) "The Grotto for meditation." *Craft Horizons*, n. 4, v. 26 (July-Aug. 1966): 22-27.
- 145) Graevenitz, Angje von. "Oneindigheid en reductie: Frederick Kieslers "Endless House" = Endlessness and reduction: Frederick Kiesler's "Endless House" [exhibition review]." *Archis*, n. 11 (Nov. 1996): 63-69.
- 146) Graham, Kenneth L. "Meyerhold and Construction in the Russian Theater." *Quarterly Journal of Speech* 29 (April 1943): 182-187.
- 147) Gropius, Walter. "The Total Theater." *Architectural Record* 67 (May 1930): 492.
- 148) Gropius, Walter. "Is There a Science to Design?" *Magazine of Art*. (Dec. 40, 1947).
- 149) Guggenheim, Marguerite. *Out of This Century*. New York: Dial Press, 1946.
- 150) Guggenheim, Marguerite. *Confessions of an Art Addict*. London: Andre Deutsch Ltd., 1960.
- 151) Guilbaut, Serge. *How New York Stole the Idea of Modern Art*. Chicago: University of Chicago Press, 1983.
- 152) Haskell, Douglas. "Building or sculpture? : the architecture of 'mass.'" *Architectural Record*, v. 67 (Apr. 1930): 366-368.
- 153) Haskell, Douglas, ""Review of Contemporary Art Applied to the store and its Display by Frederick Kiesler." *Creative Art*, VI (May 1930) sup. 109-110.
- 154) Hatton, Brian. "Architect of this century: Frederick Kiesler and his avant-garde [exhibition review]." *Blueprint* (London, England), no. 63 (Dec., 1989 – Jan., 1990): 50-52.
- 155) Hatton, Brian. "Friedrich Kiesler book review." *AA files*, no.20 (Autumn, 1990): 107-108.
- 156) Hess, Thomas. "Eccentric Propositions." *Art New Annual* 32 (1966).
- 157) Hess, Thomas. "Reviews and Previews." *Art News*, IL (October 1950): 48.
- 158) Hess, Thomas. "Reviews and Previews." *Art News*, 53 (October 1954): 5.
- 159) Hirschfield, Al. "Counter-Revolution in the Village," *New York Times Magazine*, April 23, 1944. 16, 35.

- 160) Hitchcock, Henry Russell; Johnson, Philip. *The International Style Since 1922*. New York: W.W. Norton, 1932.
- 161) Hoffmann, Ot. "Friedrich Kiesler, 1890-1965 [exhibition review]." *Bauwelt*, n.4, v.89 (Jan. 23 1998): 140.
- 162) Honzik, Karel. "A Note on Biotechnics." In *Circle*. Ed. J.L. Martin, Ben Nicholson et al. 1937; rpt. New York: Praeger, 1971; second edition 1978.
- 163) Housel, Hubert. "Adventures in Space: The Future Theatre As a Museum Study," *The Houston Post* (Saturday, April 8, 1962).
- 164) Howard, Richard. "Review of *Inside the Endless House* by Frederick Kiesler." *Craft Horizons*, LXVII (March 1967): 58.
- 165) Hulten, Pontus. *Futurism and Futurisms*. New York: Abbeville Press, 1986.
- 166) Hulten, K.G. Pontus. *The Machine*. New York: Museum of Modern Art, 1968.
- 167) Hunter, Sam. "The Israel Museum: Mostly Plus." *New York Times*, May 23, 1965.
- 168) Hutchens, Tim. "F.J. Kielser, Architect of Endlessness." *New York Herald Tribune*, Dec. 28, 1965.
- 169) Huxtable, Ada Louise. "Architecture on T.V.: 'Greatest Non-Building Architect of Our Time' Expounds his Ideas." *New York Times*, March 27, 1960.
- 170) Huxtable, Ada Louise. "Museums a la carte." *New York Times*, June 15, 1969.
- 171) *The Ideal Theater: Eight Concepts* [exhibition cat.]. New York: The Federation of Arts, 1962 (3).
- 172) Insley, Will. "Abstract architectural space - the empty building." *Tracks* III/1-2 (spring 1977): 110-123.
- 173) "Interview mit Frederick Kiesler." *Md. Moebel Interior Design*, Oktober, 1965.
- 174) International Theatre Exposition (1926: New York, N.Y.) *The International Theatre Exposition: 27 February-15 March*, Steinway building, New York, 1926 / organized by Friedrich Kiesler, Jane Heap: under auspices of Theatre Guild ... [et al.]. Published: (New York: Little review, 1926) Physical Details: 36 p.: ill. Location: Getty Center Library. MA
- 175) Internationale Ausstellung Neuer Theatertechnik (1924: Vienna, Austria) *Katalog, Programm, Almanach / Internationale Ausstellung Neuer Theatertechnik unter Mitwirkung der Gesellschaft zur Förderung Moderner Kunst in Wien im Rahmen des Musik-u. Theaterfestes in Wien*; herausgegeben von Friedrich Kiesler. Published: Wien: Löcker & Wögenstein, 1975. Reprint. Originally published: Wien : Würthle, 1924.
- 176) "Interiors of Chaos," *Time*, November 2, 1942, 47, found in the Kiesler Archives, New York.
- 177) "Isms Rampant: Peggy Guggenheim's Dream World Goes Abstract, Cubist, and Generally Non-Real." *Newsweek*, 66, as found in Kiesler Archive, New York.
- 178) "Israeli Museum to House Jewish Historical Testaments", *New York Times* (Sunday, May 9, 1965).

- 179) Jacobs, Jay. "Review of *Inside the Endless House* by Frederick Kiesler." *Art in America*, LV (May-June, 1967): 22.
- 180) Jaffé, Hans L.C. *De Stijl, 1917-1931*. Amsterdam: J.M. Meulenhoff, 1956; rpt. London: Thames & Hudson, 1970.
- 181) Janis, Sidney. *Abstract and Surrealist Art in America*. New York: Reynal & Hitchcock, 1944.
- 182) Jean, Marcel, *History of Surrealist Painting*, tr. Simam W. Taylor. London: Weidenfield & Nicolson, 1960.
- 183) Jewell, Edward Alden. "Art of This Century." *New York Times* (October 25, 1942).
- 184) Johnson, Philip. "Three architects." *Art in America*. 1960 Spring, v. 48, n. 1, 70-75.
- 185) Kallman, G.M. "Theaters." *Interiors*, CXVI (September 1956): 114-116.
- 186) Kaufmann, Edgar, "The Violent Art of Hanging Pictures," *Magazine of Art*, March 1946, 108-113. as found in the Kiesler Archives, New York.
- 187) "Kiesler: Endless House." *Quaderns d'arquitectura i Urbanisme*, n.222 (1999): 96-99.
- 188) Kiesler, Frederick. "Das Theater der Zeit." *Berliner Tagblatt*, Morgenasgabe, 1 Junni, 1923.
- 189) _____. "Abrüstung der Kunst." *Internationale Ausstellung Neuer Theatertechnik Kagalog Programm Almanach*. Wien: Velag Kunsthandlung Wurthle & Sohn, 1924. 3.
- 190) _____. "Das Railway-Theater." *Internationale Ausstellung Neuer Theatertechnik Kagalog Programm Almanach*. Wien: Velag Kunsthandlung Wurthle & Sohn, 1924. Inner cover, n.p.
- 191) _____. "Debacle des Theaters." *Internationale Ausstellung Neuer Theatertechnik Kagalog Programm Almanach*. Wien: Velag Kunsthandlung Wurthle & Sohn, 1924. 43, 45-47, 50, 52-58.
- 192) _____. "De la Nature Morte Vivant." *Internationale Ausstellung Neuer Theatertechnik Kagalog Programm Almanach*. Wien: Velag Kunsthandlung Wurthle & Sohn, 1924. 20-21.
- 193) _____. "Mechanische Raumszenerie." *Internationale Ausstellung Neuer Theatertechnik Kagalog Programm Almanach*. Wien: Velag Kunsthandlung Wurthle & Sohn, 1924. 24-25.
- 194) _____. "Schauspiel, Bildbühne, Raumbühne, Part I, Part Teil II." *Berliner Boersen Courier*, 16 and 21 Marz 1924.
- 195) _____. "Vitalbau-Raumstadt-Funktionelle Arhitektur." *De Stijl*, 6 year, nos. 10-11 (Series 12, 1924-1924): 141.
- 196) _____. "Ausstellungssystem Leger un Trager." *De Stijl*, 6 year, nos.10, 11 (1925): 138-141.
- 197) _____. "Die Kulisse expplodiert." *Pásmo = La zone = Die Zone = The zone = La zona*. Brno: A. Černík (1925): 5/6.

- 198) _____. "Manifest: Vitalbau-Raumstadt-Funktionelle Architektur," in *De Stijl*. (6 July, 1925): 10-11.
- 199) _____. "Die Stadt in der Luft." *G Zeitschrift fur elementare Gestaltung*, no. 4 (March 1926): 10.
- 200) _____. "Eintritt 75 cents." *G Zeitschrift fur elementare Gestaltung*, no. 5-6 (April 1926): 51.
- 201) _____. "Erneuerung des Theaters." *De Stijl*, 6 year, nos. 75-76, Series 13 (January 1926): 494.
- 202) _____. "School of the Theater." *New York Telegram*. 22 March 1926.
- 203) _____. "Forward." In *Exhibition Catalogue of International Theater Exposition*. Ed. by Frederick Kiesler and Jane Heap. New York: Steinway Hall, 1926.
- 204) _____. "Introduction." In *Exhibition Catalogue of International Theater Exposition*. Ed. by Frederick Kiesler and Jane Heap. New York: Steinway Hall, 1926.
- 205) _____. "The Debacle of the Modern Theater," In *Exhibition Catalogue of International Theater Exposition*, ed. Frederick Kiesler and Jane Heap. New York: Steinway Hall, 1926.
- 206) _____. "Das Theater der Zeit." *Berliner Tagblatt*, Morgenasgabe, 1 Junni, 1923.
- 207) _____. "The Theater is Dead," *The Little Review* (Winter 1926): 61-62.
- 208) _____. "L'Architecture Elementarisée." *De Stijl*, nos. 79-84 (1927)" 101-102.
- 209) _____. "Building a Cinema Theater." *New York Times*, Feb. 2, 1929.
- 210) _____. *Contemporary Art Applied to the Store and its Display*. New York: Bretano's Publishers Inc., 1930.
- 211) _____. "Project for a Space Theater Seating 100,000 People." *Architectural Record* 67 (May 1930): 112.
- 212) _____. "Notes d' Amerique." *Cahiers d'Art* 6, no. 3 (1931): 165-166.
- 213) _____. "Homage a Theo van Doesburg." *De Stijl*, no. 90 (dernier numero) (January 1932): 153-154.
- 214) _____. In Memoriam: Theo van Doesburg." *Shelter*, II (April 1932): 29.
- 215) _____. "A Festival Theater, The Space Theatre for Woodstock, N.Y." Introduction by R. Buckminster Fuller). *Shelter*, v. 2, (May 1932): 42-47.
- 216) _____. "The Universal." *The Architectural Forum* 57 (December 1932): 536-542.
- 217) _____. "Space house." *Architectural Record*, v. 75 (Jan., 1934): 44-61.
- 218) _____. "Notes on Architecture: The Space House--Annotations at Random." *Hound and Horn*, VII (Jan.-Mar. 1934): 292-297.
- 219) _____. "Notes on Improving Theater Design." *Theater Arts Monthly*, XVIII (Sep. 1934): 726-730.

- 220) _____. "Murals without Walls: Relating to Gorky's Newark Project." *Art Front*, II (December 1936): 10-11.
- 221) _____. The Architect in Search of Design Correlation, a Column on Exhibits, the Theater and the Cinema." *Architectural Record*. LXXXI (Feb. 1937): 7-15.
- 222) _____. "Design Correlation: animals and architecture." *Architectural Record*, v. 81 (Apr. 1937): 87-92.
- 223) _____. "Design-Correlation: from brush-painted glass pictures of the Middle Ages to [the] 1920's." *Architectural Record*, v. 81 (May 1937): 53-59.
- 224) _____. "Design-Correlation: towards prefabrication of folk-spectacles: scientific development of sound reproduction proves an important influence on architectural design of theaters." *Architectural Record*. (June 1937): 93-96.
- 225) _____. "Design-Correlation: certain data pertaining to the genesis of design by light (photography) I-II." *Architectural Record*, v. 82 (July 1937): 89-92; (Aug. 1937): 79-84.
- 226) _____. "On Correalism and Biotechnique: a definition and the new approach to building design." *Architectural Record*, v. 86 (September 1939): 60-75.
- 227) _____. *Architecture as biotechnique* (New York, Planners Institute, 1940) "Reprint from the Architectural record, September 1939. Errata have been corrected, the Index of terms, the introductory note and the cover illustrations added. (Record ID: CSUGALP2791-B RLG)
- 228) _____. "Design Correlation as an approach to architectural planning," *VVV Almanac*, n. 2-3, (Mar. 1943): 76-79.
- 229) _____. "Some Testimonial Drawings of Dream Images," *VVV Almanac*, ed. David Hare, New York, 1943.
- 230) _____. "Twin Touch Test." *VVV*, no. 4 (1943).
- 231) _____. "Les Larves d'Imagie d'Henri Robert Marcel Duchamp." *View* (Mar. 1945): 24-30.
- 232) _____. "Notes on the Spiral Theme in Recent Architecture." *Partisan Review*, XIII (Winter 1946): 98-104.
- 233) _____. "L'Architecture Magique de la Salle de Superstition." In *Le Surrealisme in 1947 Exposition internationale du Surrealism*. Ed. by Andre Breton and Marcel Duchamp. Paris: Pierre a Fen, Naeght Edideur, 1947.
- 234) _____. "Manifeste du correalisme," *Arts plastiques 2e numéro hors-série de L'Architecture d'aujourd'hui consacré aux arts plastiques*. Boulogne, *Architecture d'aujourd'hui*, 1949.
- 235) _____. "Pseudo-Functionalism in Modern Architecture." *Partisan Review*, XVI (July 1949): 733-742.
- 236) _____. "Second Manifesto of Correalism." *Art International*, IX (March 1950).

- 237) _____. "Frederick Kiesler's Endless House and its psychological lighting," *Contract Interiors*, v. 110 (November 1950): 122-129.
- 238) _____. Johnson, Philip; Sweeney, James Johnson; Shahn, Ben; Sert, Jose Luis; Hitchcock, Henry Russell. Symposium: "The relation of painting and sculpture to architecture". New York: Museum of Modern Art, 1951. How to combine architecture, painting and sculpture. Relation of painting and sculpture to architecture. [Museum of Modern Art. Call Number: 20 N47s]
- 239) _____. "Note on Correalism." In *Fifteen Americans*. New York: The Museum of Modern Art, 1952.
- 240) _____. *Galaxies* [Exhibition cat.]. New York: Sidney Janis, 1954.
- 241) _____. "Mozart 1756-1956: A Modern Appraiser—Mozart the Artist and his Bicentennial." *Art News* 54, no. 9 (Jan. 1956): 22-25, 58.
- 242) _____; Bartos, A.P. "Shrine of the book." *Architectural Record* 137 (June 1956): 20.
- 243) _____. "The Art of Architecture for Art." *Art News*, LVI (Oct. 1957): 39-43, 50-54.
- 244) _____. "Design in Continuity." *Architectural Forum*, CVII (Oct. 1957): 126-131.
- 245) _____. "The Art of Architecture for Art." *Art News* 56 (October 1957): 38-43, 50, 52, 54.
- 246) _____. "Is Today's Artist with or against the Past." *Art News*, LVII (Sept. 1958): 39, 62-63.
- 247) _____. "Renouveau du Theater." *Aujourd'hui*, no. 17 (1958): 38-39.
- 248) _____. "Art is the Teaching of Resistance." *College Art Journal*, XVIII (Spring, 1959): 236-238.
- 249) _____. "Frank Lloyd Wright." *It Is*, n. 4 (Fall 1959): 27.
- 250) _____. "Building Architect." Letter to the Art Editor. *New York Times* (April 17, 1960).
- 251) _____. "Form is Language," *Art News*, LIX (April 1960): 35.
- 252) _____. "Hazards and the Endless house." *Art News* 59 (April 1960): 35.
- 253) _____. "Kiesler's Pursuit of an Idea," interview by Thomas Creighton, *Progressive Architecture*, v. 42 (July 1961): 105-116.
- 254) _____. "The ideal theater: eight concepts." *Progressive Architecture*, v. 42, (Dec. 1961): 49, 51-53.
- 255) _____. "For Ruth Abrams' Exhibition of Small Paintings." *Espocicion Ruth Abrams* (Exhibition Catalogue). Caracas: Amigos del Museo de Bellas Artes de Caracas, 1963.
- 256) _____. *Frederick Kiesler: Environmental Sculpture*. New York: Guggenheim, Solomon R., Museum, 1964. [Record ID: CASXA13080-B RLG]
- 257) _____. "Breaking the Straight Jacket." *Show*, March 1964, 76-77.

- 258) _____. "The Shrine of the Book." *Ariel* (Spring 1965): 11-12.
- 259) _____. "Kiesler by Kiesler." *Architectural Forum*, n. 2, v. 123 (Sept. 1965): 64-72.
- 260) _____. "Second Manifesto of Correalism." *Art International*, March 1965, 16.
- 261) _____. *The 'Endless House: 'Inside the Endless House: Art, People and Architecture: A Journal*. New York: Simon and Schuster, 1965.
- 262) _____. "The Future: Notes on Architecture as Sculpture." *Art in America*, v. 54 (May-June 1966): 57-68.
- 263) _____. "The Grotto of Meditation." *Craft Horizons* 26 (July 1966): 18-27.
- 264) _____. *Kiesler: creatures, landscapes, prairies: [catalogue of the exhibition held at the] Martha Jackson Gallery*. New York: Martha Jackson Gallery, 1966. [OCLC: 3467142 WorldCat]
- 265) _____. *Inside the endless house; art, people, and architecture: a journal*. New York, Simon and Schuster, 1966.
- 266) _____. Frederick Kiesler: [exhibition] Howard Wise Gallery, April 12 to May 10, 1969. New York: The Gallery, 1969. [OCLC: 19940654 WorldCat]
- 267) _____. Internationale Ausstellung neuer Theatertechnik / unter Mitwirkung der Gesellschaft zur Förderung Moderner Kunst in Wien: im Rahmen des Musik- u. Theaterfestes der Stadt Wien, 1924: Katalog, Programm, Almanach herausgegeben von Friedrich Kiesler. Wien: Würthle, 1924. Second edition, Wien: Löcker & Wögenstein, 1975. [Marquand SA PN2019 1924 .I57][Record ID: NJPG82-B15738 RLG]
- 268) _____. Architekt, Maler, Bildhauer, Schriftsteller, Bühnenbildner, Designer. Innsbruck: Wien: Allerheiligen; Galerie Nächst, St. Stephan, 1975. [Marquand Library (SA) Oversize Oversize NA737.K5 A45q]
- 269) _____. "Interview," as aired in "Radio Broadcast Interview with Mrs. Lillian Kiesler," *Music for the New Age*, WUHY-FM60, Philadelphia, PA, May 6 & 13, 1976, transcribed by Marjorie Frankel under William Burbach in association with Lillian Kiesler and Judith Vassallo, as found in Kiesler Archives, New York.
- 270) _____; Pincus-Witten, Robert; Barr, Alfred Hamilton. *Frederick Kiesler (1890-1965), galaxies*. New York: Alfred Kren Gallery; Jason McCoy, 1986. [OCLC: 21460112 WorldCat]
- 271) _____; Theis, Lioba. *Frederick Kiesler*. Köln: Michael Werner, 1988. [OCLC: 30097023 WorldCat] Smithsonian Institution Libraries. SNI& (Record ID: DCSG642997-B RLG)
- 272) _____. *Frederick Kiesler 1890-1965*, ed. Yehuda Safran. London: Architectural Association, 1989. Includes essays: "In the shadow of Bucephalus," by Yehuda Safran;"In quest of the ideal theatre," by Barbara Lesák; "The endless house," by Dieter Bogner; "Pseudo-functionalism in modern architecture," by Frederick Kiesler; "Frederick Kiesler and The bride stripped bare," by Jennifer Gough-Cooper and Jacques Caumont; "Design-correlation: Duchamp's Large glass," by Frederick Kiesler.
- 273) _____. *Frederick J. Kiesler: Selected Writings*, ed. Siegfried Gohr and Gunda Luyken. Stuttgart: Verlag Gerd Hatje, Ostfildern, 1996.

- 274) _____; Béret, Chantal. Frederick Kiesler, artiste-architecte. Paris: Centre Georges Pompidou, 1996.
- 275) _____; Bonet, Juan Manuel; Casanova, Maria. *Frederick Kiesler, 1890-1965: en el interior del endless house = inside the endless house*. Valencia: Centre Julio González, Generalitat Valenciana Conselleria de Cultura, Educació i Ciència, 1997.
- 276) _____. *Kiesler, Frederick. [Clippings]* Location: New York Public Library - Dance Collection. LOC1 *MGZRSubjects: Kiesler, Frederick. (Record ID: NYPY737158368-B RLG)
- 277) Kiesler, Lillian. "Frederick Kiesler Biography," Frederick John Kiesler Papers, New York, 10/31/80, held at the Kiesler Archives, Smithsonian Archives of American Art, New York.
- 278) _____. Catalogue of the original works of Frederick Kiesler. New York: L. Kiesler, 1993. [OCLC: 31995725 WorldCat]
- 279) _____. Inventory of books in the personal library of Frederick Kiesler. [S.l.]: L. Kiesler, 1983. [OCLC: 32006134 WorldCat]
- 280) _____. "Frederick Kiesler: In Search of... Quintessence of Cinema, Compiled by Lillian Kiesler, September 1977," *A Tribute to Anthology Film Archives' Avant-garde Film Preservation Program An Evening Dedicated to Frederick Kiesler, Museum of Modern Art, New York, October 19, 1977*. Washington D.C.: American Film Institute (1977) 30.
- 281) "Kiesler's Galaxies." *Interiors*, CXIV (Nov. 1954): 166-167.
- 282) "Kiesler's Galaxies." *New York Herald Tribune*, Nov. 3, 1954.
- 283) King, Alexander. "Décor of 'Helen Retires'." *New York Times* (Mar. 6, 1934).
- 284) Kirby, Michael. "Environmental Theatre," in *Total Theater: A Critical anthology*, ed. E.T. Kirby. New York: E.P. Dutton & Co., 1969.
- 285) Knox, Sanka. "Stairs 'Float' and Walls 'Flow' at the City's Latest Art Gallery." *New York Times*, Jan. 22, 1957.
- 286) Kramer, Hilton. "Month in Review...World House." *Arts*, XXXI (March 1957): 49.
- 287) Kramer, Hilton. "Sculpture of Kiesler at the Marth Jackson Gallery." *New York Times*, May 7, 1966.
- 288) The Editors, L'Architecture d'aujourd'hui, "Translation from the French of the Editorial of L'Architecture d'aujourd'hui," June 1949, as found in the Kiesler Archive, New York.
- 289) Lansner, Kermit. "A World of Order." *New Republic*, CXXV (Jan. 26, 1953): 22.
- 290) Le Corbusier. *Le Livre de Ronchamp*. Ed. Joan Petit. Paris: Les Cahiers Forces Vives/Editee, 1961.
- 291) Lesák, Barbara. "Fredrich Kiesler's Railway-Theater Oder: Wie Spiele ich Theater auf der Achterbahy?" In *HPG (Hochschule fur Gestaltung)*. Offenbach/Main, 1985.
- 292) Lesák, Barbara. "Alles dreht sich, alles bewegt sich...Die dynamischen Bühnenprojekte von Friedrich Kiesler = Everything is turning, everything is moving...The dynamic stage projects of Friedrich Kiesler." *Daidalos*, n. 14 (Dec. 1984): 76-84.

- 293) Lesák, Barbara. *Die Kulisse explodiert: Friedrich Kieslers Theaterexperimente und Architekturprojekte 1923-1925* (Wien: Löcker Verlag, 1988) (255 page book)
- 294) Lesak, Barbara. [Kulisse explodiert. English] *Die Kulisse explodiert = The scenery explodes: Frederick Kiesler's theater experiments and architectural projects 1923-1925*. 15 page English summary. tr. Clyde A. Joyce and Panch Katzmann. Wien: Locker, 1989. (LC Call Number: NA1088.K46 L4 1988 LCCN: 89-131752 ISBN: 3-85409-120-6 RLG)
- 295) Levin, Kim. "Kiesler and Mondrian, Art into Life." *Art News*, LXIII (May 1964): 38-41, 49-50.
- 296) Levin, Kim. "Oh Fly with Me." *New York Times*. May 10, 1964.
- 297) Levin, Marlin, "The Shrine of The Book," *Hadassah Magazine*, May 1965, Vol. 46 #9, frame 249-250, as found in the Kiesler Archive, New York.
- 298) Levy, Julian. *Memoir of an Art Gallery*. New York: C.P. Putnam's sons, 1977.
- 299) Lieberman, William. *Twentieth Century Art from the Nelson Aldrich Rockefeller Collection* [exhibition cat.]. New York: Museum of Modern Art, 1969.
- 300) Linder, Mark, "Wild Kingdom, in " *Autonomy and Ideology: Positioning an Avant-Garde in America*, ed. R.E. Somol. New York: Monacelli Press, 1997.
- 301) Lippard, Lucy. "The New York Letter." *Art International*, X (October 1966): 40-41.
- 302) Lippard, Lucy. *Surrealists on Art*. Englewood Cliffs: Prentice Hall, 1970.
- 303) Lissitzky, El. *Russia: An Architecture for World Revolution*. Tr. Eric Dinbosch. Cambridge: MIT Press, 1970.
- 304) Lissitzky, El; Arp, Hans. *Die Kunstismen*. Erlenbach-Zurich, Eugen Reutsch, 1925; rpt. New York: Arno Press, 1968.
- 305) Lonberg, Holm. "New Theater Architecture in Europe." *Architectural Record*, LXVII (May 1930): 490-496.
- 306) "Meant to be lived in: A Designer-Sculptor Disposes of One of His 'Galaxies' for \$4,500." *Life* 32 (May 26, 1952): 79-80, 82.
- 307) Marcus, Leonard S. *The American Store Window*. New York: Whitney Library of Design, 1978.
- 308) Menking, William. "Notes from New York [exhibition review]." *Building Design*, n. 930 (Mar.31 1989): 18.
- 309) Miller, Arthur. *The Ideal Theater: Eight Concepts*. New York: The American Foundation of Arts, 1962.
- 310) Miller, Dorothy (ed.). *Fifteen Americans* [Exhibition cat.]. New York: Museum of Modern Art, 1952.
- 311) "Models of Things to Come? 8 New Theaters Going on the Road," *Herald Tribune*, New York, (January 26, 1962).

- 312) "Modern Art in a Modern Setting." *New York Times Magazine*, Nov. 1, 1942, 16-17.
- 313) "Modern Artists on Artists of the Past." Typescript of Discussion held April 22, 1952, Museum of Modern Art.
- 314) Moholy-Nagy, L.. *The New Vision*. Tr. Daphne M. Hoffmann. New York: W.W. Norton & Company, 1938.
- 315) Molderings, Herbert. *Marcel Duchamp*. Frankfurt and Paris: Qumran Verlag, 1983.
- 316) Momi, Paolo de. "Frederick Kiesler." *Casabella*, n. 407, v. 39 (Nov., 1975): 26-31.
- 317) Morpurgo, Valerio. "Kiesleriana = Kiesleriana [exhibition review]." *Ottagono*, n.120, v. 31 (Sept.-Nov. 1996): 126-131.
- 318) "Mr. Kiesler, Meet Mr. Varese, Meet Mr. Meredith: The Blue Sky Beckons." *Show 4* (January-March 1964): 77, 90. 92.
- 319) Munro, Eleanor. "Exploration in Form," *Perspectives USA*. XVI (Summer 1956): 114-116.
- 320) Munz, Ludwig; Kunstler, Gustav. *Adolf Loos: Pioneer of Modern Architecture*. Introduction by Nikolas Pevsner. New York: Frederick Praeger, 1966.
- 321) *The Muralist and Modern Architecture*. [Exhibition cat.] New York: Kootz Gallery, 1950.
- 322) "The Muralist and the Modern Architect." *Arts and Architecture*, LXVIII (April, 1951): 18-19.
- 323) Museum of Modern Art (New York, N.Y.). Symposia. *Modern artists on artists of the past*. (New York, Museum of Modern Art, 1952) Location: Museum of Modern Art. Call Number: 1 N47mo. Typescript of symposium held at the Museum April 22, 1952. Speakers include Andrew C. Ritchie, moderator, Frederick J. Kiesler, Peter Blume, Jack Levine, Kurt Roesch. Outline only for statement by Kiesler.
- 324) Neilson, Nancy Ward. "Acquisitions; recent American prints." *Saint Louis Art Museum Bulletin* X/3 (May-June 1974): 37-41.
- 325) "New Kind of Space to Show Art." *Art News*, LV (February, 1957): 36-37.
- 326) Nevidal, Hans. *The Book of the shrine / a cura di*. Wien: Minimal, 1992. Other Titles: Qumram, der Schrein des Buches.
- 327) "New Display Techniques for 'Art of This Century'." *Architectural Record*, 78 (February, 1943): 49-53.
- 328) "New Saks-Fifth Avenue Window Sets Reflect Ultra in Display Background," *Women's Wear*, Saturday, March 24, 1928, as found in the Kiesler Archives, Smithsonian Archives of American Art, New York.
- 329) Nikonow, John P. "Is Space Curved?" *Scientific American* 147 (November 1932): 278-279.
- 330) "Obituary." *Architecture d'aujourd'hui*, n. 124, v. 36 (Feb.-Mar. 1966): 23.
- 331) "Obituary." *Architectural Design*, v. 36 (Apr. 1966): 162.
- 332) "Obituary." *Architectural Record*, v. 139 (Feb. 1966): 36.
- 333) "Obituary." *New York Times*. Feb 28, 1965.

- 334) "Obituaries...Kiesler." *Art News*, LXIV (Feb. 1966): 6.
- 335) "Obituaries...Frederick Kiesler." *Julliard News Bulletin*, IV (Feb. 1966).
- 336) O'Connor, Francis; Quaintance, Don; Sharp, Jasper; Sonzogni, Valentina; Davidson, Susan; Rylands, Philip. *Peggy Guggenheim & Frederick Kiesler: The Story Of Art Of This Century*, ed. Dieter Bogner, Venice: Guggenheim Museum, 2005.
- 337) Oud, J.J.P. "Art and machine," *De Stijl* 1, no. 3(4), 25-27. Reprinted in Hans L.C. Jaffe, *De Stijl*, New York, 1971.
- 338) Ozeri, Yigal; Kiesler, Frederick; Perry-Lehmann, Meira; Yafeh, Ora; Muze'on Yisra'el. *Kadim ve-hekhalot: Yig'al 'Ozeri be-'ikvot Fredrik Kisler*. (Exhibition Catalog) Jerusalem Israel: Yerushalayim: Muze'on Yisra'el, 1995. [OCLC: 32873733 WorldCat]
- 339) Pachner, Joan. "The odd couple; two installations by David Hare and Frederick Kiesler." *Arts Magazine* LVII/4 (Dec 1982): 84-86.
- 340) Pedio, Renato. "Una Leggenda Moderna: Frederick Kiesler, dal neoplasticismo alla continuità." *L'Architettura Cronache e Storia*, n. 5, v. 13 (Sept. 1967): 298-318.
- 341) "Peggy Guggenheim opens Modern Museum." *Art Digest*, XVII (Nov. 1, 1942): 8.
- 342) Pelenc, Arielle. *Vision machine: Musée des beaux-arts de Nantes, 13 mai-10 septembre 2000 / catalogue réalisé sous la direction d'Arielle Péleenc*. Paris: Somogy; Nantes: Musée des beaux-arts, 2000.
- 343) "People in the Arts...Plans for an Exhibition of the 'Endless House'." *Arts*, XXII (March 1, 1958): 14.
- 344) "People in the News: Frederick Kiesler, Structural Theories." *Vogue*, 1 August 1947, 100.
- 345) Perry, Ellen. "Shrine of the Book." *Progressive Architecture*, XXXXVI (Sept. 1965): 126-133.
- 346) Phillips, Lisa, *Frederick Kiesler* (New York: Whitney Museum of American Art in association with W.W. Norton & Company, 1989) Includes Essays: "Architect of endless innovation," by Lisa Phillips; "Visionary of the European theater," by Barbara Lesák; "Kiesler and the European avant-garde by Dieter Bogner; "The art of revolutionary display techniques," by Cynthia Goodman; "Part of the: Kiesler's theatrical art in America," by Jeanne T. Newlin; "Environmental artist," by Lisa Phillips.
- 347) Phillips, Lisa. *The Third Dimension*. Sculpture of the New York School. New York: The Whitney Museum of American Art, 1984.
- 348) Phillips, Stephen. "Introjection and Projection: Frederick Kiesler and his dream machine," *Surrealism and Architecture*, ed. Thomas Mical, New York: Routledge, 2005: 140-155.
- 349) "Pictures On Ceilings," *New York World-Telegram, Art and Antiques [section]*, (Saturday, March 8, 1947): 6.
- 350) Pincus-Witten, Robert. "Thinking about Kiesler." In *Frederick Kiesler: 1890-1965 Galaxies*. New York: The Alfred Kren Gallery and Jason McCoy, Inc.
- 351) Preston, Stuart. "And Now, 'Galaxies,' *New York Times*. October 3, 1954.

- 352) *Proceedings: Conference on Coordination in Design*. Ann Arbor: University of Michigan, 1940.
- 353) Raskin, Eugene. "Cerebrationism & vacuotechnique: the great architect evolves a new theory." *Pencil Points*, v. 20 (Dec. 1939): 791-792.
- 354) Raushenberg, Robert. "Inside the Endless House: An Invitation to be Lovable." *Vogue*, 1 March 1967.
- 355) Raynor, Vivien. "Murals without walls; Arshile Gorky's aviation murals rediscovered [Review of an exhibition catalogue]." *New York Times* (10 Oct 1978): C21.
- 356) Reed, Judith. "Kiesler the Tent-Maker, does Modern Décor." *Art Digest*, XXI (March 1946): 108-113.
- 357) Reindhardt, Ad. "Neo-Surrealists Take over a Gallery," *New York, PM.*, (Tuesday, March 11, 1947): 10.
- 358) "The Relationship of Painting and Sculpture to Architecture." Typescript of discussion held March 19, 1951, Museum of Modern Art.
- 359) "Remembrance of Things Past", Art Section, *Time*, (July 21 1947).
- 360) "Reviews and Previews...Frederick Kiesler." *Art News*, LXXIX (Summer 1969): 16.
- 361) Richter, Hans; Graff, Werner; Kiesler, Frederick; Lissitzky, El; Mies van der Rohe, Ludwig. G. No. 1 (1923)-no. 5/6 (1926). Berlin, 1923-26.
- 362) Richter, Hans. "Easel-Scroll-Film," *Magazine of Art*, February 1952.
- 363) Richter, Hans. *Köpfe und Hinterköpfe*. Zurich: Verlag der Arche, 1967.
- 364) "Rites for Kiesler, Designer, Seek to Capture Colorful Personality." *New York Times*, December 30, 1965.
- 365) Rizzoli, Paolo. "Friederich Kiesler "artista totale" = Friederich Kiesler: the "total artist" [exhibition review]." *Arca*, Suppl. News n. 17 (June 1988): 7.
- 366) Robins, Corinne. "Dream House," Review of *Inside the Endless House* by Frederick Kiesler." *Bookweek* (May 14, 1967): 11, 13.
- 367) Robins, Corinne. "Review of Inside the Endless House." *Book Week*, 14 May 1967, 11-13.
- 368) Rodman, Selden. *Conversations with Artists*. New York: Capricorn Books, 1961.
- 369) Roitman, Adolfo. "The history, architecture, and symbolism of the Shrine of the Book." *Israel Museum Journal*, v. 15 (Summer 1997): 15-34.
- 370) Roth, Anna (ed.). "Kiesler, Frederick." *Current Biography*. New York: H.W. Wilson Co., 1944.
- 371) Rubin, William. *Dada, Surrealism and their Heritage* [Exhibition cat.]. New York: Museum of Modern Art, 1968.
- 372) Russell, John. "Gesture of Great Confidence," *The Sunday Times*, (May 16, 1965).

- 373) Ryan, Raymund. "The eye of the storm: Frederick Kiesler [exhibition review]" *Blueprint*, n. 31 (London, England) (Sept., 1996): 60-61.
- 374) Safran, Yehuda. "Frederick Kiesler 1890-1965: AA Exhibitions Gallery, Members' Room & Bar 8 November-9 December 1989 [exhibition review]." *AA files*, n. 20 (Autumn, 1990): 83-88.
- 375) Safran, Yehuda. "Frederick Kiesler, 1890-1965: in the shadow of Bucephalus." *AA files*, n. 20 (Autumn 1990) 83-88.
- 376) Safran, Yehuda. "Le theatrum mundi de Frederick Kiesler = Frederick Kiesler's theatrum mundi." *Art Press*, n. 215 (July-Aug 1996): 60-64.
- 377) Sandberg, Willem. "The Israel Museum in Jerusalem." *Museum*, XIX (1966): 15-30.
- 378) Sandberg, Willem. "Frederick Kiesler and the Shrine of the Book." *The Israel Museum News*, I (Jan. 10, 1966): 5-6.
- 379) Sawin, Martica. "Galaxies by Kiesler." *Arts Digest* 29 (15 October 1954): 21-22.
- 380) Schjedahl, Peter. "When the Divine Fit was On." *New York Times*. April 20, 1969.
- 381) Schnall, Ben. "Design's bad boy: a pint-sized scrapper who, after thirty years, still challenges all comers." *The Architectural Forum*, Vol. 86 (Feb 1947): 88-92.
- 382) Schwartz, Ellen. "Murals without walls; Arshile Gorky's aviation murals rediscovered [Review of an exhibition catalogue]." *Art News* LXXVIII/2 (Feb 1979): 136-137.
- 383) "Scrolls within Scrolls." *Architectural Review*, CXXXVIII (December 1965): 393.
- 384) "The Sculpture Garden," *Supplement to Israel Digest*, (1965).
- 385) Sgan-Cohen, Michael. "Kiesler Onstage and Off." *Art in America* 69 (Summer 1981): 37.
- 386) Sharp, Dennis. "Kiesler country [exhibition review]." *Building Design*, n. 962 (Nov. 17, 1989): 2.
- 387) Sierek, Karl. *Der Analytiker im Kino: Siegfried Bernfeld, Psychoanalyse, Filmtheorie*, Frankfurt: Sroemfeld, 2000.
- 388) Steadman, Philip. *The Evolution of Designs: Biological analogy in architecture and the applied arts*. Cambridge: Cambridge University Press, 1979.
- 389) Straaten, Evert van. "Wie is Pietro Saga?." *Jong Holland* II/1 (Mar 1986): 23-28,59.
- 390) Solomon R. Guggenheim Museum, New York. *Frederick Kiesler: environmental sculpture*. (Solomon R. Guggenheim Museum, New York: New York, 1964.
- 391) "Something New." *Time*. LXIV (Oct. 11, 1954): 96.
- 392) "Space and the Years." *Architectural Forum* 60 (January 1934): 17-21.
- 393) "The Space House." *Vogue*, 1 October 1943, 80-81.

- 394) "Special feature: 33 people who moved modernism: rethinking the modernists: international perspectives. Kenchiku Bunka, n.631, v.54 (May 1999): 15,17-152.
- 395) Spring, Bernard P., ed., *Building with Structural Sandwich Panels*, Massachusetts Institute of Technology Library Rotch Limited, October 1958.
- 396) Spuybroek, Lars. "Vision Machine [interview]." *Architecture intérieure-Créé*, n.294, (1999): 74-79.
- 397) St. Florian, Friedrich. "Architekt der Unendlichkeit 1890-1965." *Bau: Schrift für Architektur und Städtebau*, n. 1/2, v. 21 (1966): 3-9.
- 398) *Struggle for New Form* (New York, New York: World House Galleries, 1957) Microfiche. New York: Knoedler, 1976.
- 399) "Surrealism." *Art News*, XLIII (Nov. 1-14, 1942): 24.
- 400) *Le Surréalisme en 1947*. [Exhibition cat.] Paris: Galerie Maeght, 1947.
- 401) Swain, Martica. "Galaxies by Kiesler." *Art Digest*, IXXX (Oct. 15, 1954): 21-22.
- 402) "Symbol of State: Ian Nairn Looks at the New Israel Museum," *The Observer, Weekend Review*. (May 14, 1965).
- 403) "A Symposium on how to Combine Architecture, Painting and Sculpture." (Condensed transcript). *Interiors*, CX (May 1951): 100-105.
- 404) "Ten Miles High." *Architectural Forum*, n. 1, v. 124 (Jan.-Feb. 1966): 30-31.
- 405) Theatre Guild; New York International Theatre Exposition (1926). International Theatre Exposition, New York, 1926. Organized by Friedrich Kiesler [and] JaneHeap. Under auspices of Theatre Guild, Provincetown Playhouse, Greenwich Village Theatre [and] Neighborhood Playhouse. Feb. 27- Mar. 15, Steinway Building. New York, n.p., 1926. [OCLC: 32024679 WorldCat]
- 406) Tillim, Sidney. "Frederick Kiesler." *Arts*, XXXV (March 1961): 54.
- 407) "Tough Profit." *Time*, LXXIII (May 25, 1959): 78, 81.
- 408) "Two Houses of the Future to be exhibited." Press Release 520825-54, Museum of Modern Art, August 25, 1952.
- 409) "Umberto Riva: interpretare Kiesler = Interpreting Kiesler." *Domus*, n.792, suppl. (Apr. 1997): 36-37.
- 410) United States Department of Commerce. *Report of the Commission Appointed by the Secretary of Commerce to Visit and Report upon the International Exposition of Modern Decoration and Industrial Art in Paris, 1925*. Washington, 1926.
- 411) "The Universal." *Architectural Forum*, LXVII (Dec. 1932) 536-541.
- 412) Vidler, Tony, *The Architectural Uncanny: Essays in the Modern Unhomely*. Cambridge: MIT Press, 1992.
- 413) Ward, Janet, *Weimer Surfaces: Urban Visual culture in 1920s Germany*. Berkeley: University of California Press, 2001.

- 414) Weihsmann, Helmut. "Qumran: Frédéric Kiesler: Schrein des Buches." *Architektur & Bauforum*, n. 151, v. 25 (1992): 72-73.
- 415) Willard, Charlotte. "Searcher of Truth." *New York Post*. May 14, 1966.
- 416) Willard, Charlotte. "Eye to I." *Art in America*, LIV (Mar.-Apr. 1966): 30-37.
- 417) Wolf, William. "Futuristic Theater to Combine Movies and Living Stage," *The Milwaukee Journal: Green Sheet*, (Monday, February 19, 1962).
- 418) Yamaguchi, Katsuhiko. *Frederick Kiesler, environmental artist* (Tokyo: Bijutsu Shuppan-sha, 1978) (584 pages--captions in English).
- 419) Yates, Peter. "Review of Inside the Endless House by Frederick Kiesler." *Arts and Architecture*, LXXXIV (July-August 1967): 34.
- 420) Young, Marguerite. Review of *Inside the Endless House* by Frederick Kiesler." *Architectural Forum*, CXXVI (May 1967): 71, 101.

Masters Theses and Doctoral Dissertations: Frederick Kiesler

- 1) Franco, Marta. Towards a Correal architecture: reflections on Frederick Kiesler. Ottawa: National Library of Canada, 2000. [M.Arch. Thesis McGill University, 1996][OCLC: 46769459 WorldCat]
- 2) Held, R.L., *Endless Innovations: Frederick Kiesler's Theory and Scenic Design*. Ann Arbor: UMI Research Press, 1982.
- 3) Lelke, Roland. Der endlose Raum in Frederick Kieslers Schrein des Buches / Roland Lelke (Aachen: Shaker, 1999) Originally presented as the author's thesis (doctoral)--Dead Sea Scrolls. Museums Israel Jerusalem 1950-2000. Technische Hochschule Aachen, 1998.
- 4) Roig, Raphael O. The Continuous World of Frederick J. University of California, Los Angeles, Master's Thesis, Department of Industrial Design, June 1, 1965. Moma Archive Item # 10 box 51
- 5) Schwartz, Ellen Jane. Frederick Kiesler: his life, ideas and works. Thesis (M.A.) University of Maryland, 1970. [OCLC: 9932111 WorldCat]
- 6) Sgan-Cohen, Michael S., 1989. Frederick Kiesler: Artist, Architect, Visionary—A Study of his Work and Writing. Ph.D. diss., Art History Department, City University of New York.
- 7) Sonzogni, Valentina. *Frederick Kiesler, La Endless House come infinita rcerca dello spazio infinito*, Masters Thesis, Università di Roma "la Sapienza", 1999.
- 8) Weekes, Burton. Analysis of Frederick J. Kiesler's "Universal theatre" and implications of flexible theatre in America today. Thesis (M.A.)--Syracuse University, 1958. (Microfilmed--Syracuse, N.Y: 1966)

Archived Documents: Frederick Kiesler

- 1) Austrian Frederick and Lillian Kiesler Private Foundation, Vienna. Holdings: Extensive original artworks, magazines, photographs, unpublished manuscripts, interviews, personal library books, and correspondence by Frederick, Lillian and Steffi Kiesler—sold to the foundation by Lillian Kiesler in 1997 and 2001 (archive previously held in New York). On

site library organized by Dieter Bogner holds copies of most published essays and books on Frederick Kiesler as well as many of the copies of records held in other archives. Recent acquisitions from 2001, including student works from Columbia studio projects, are still being unboxed.

- 2) Badovici, Jean. Title: Letters received, 1924-1951. Editor for the *Librarie Morance* and *L'Architecture Vivante*. Collection includes letters from Frederick Kiesler. Getty Center Library. The Getty Research Library, Special Collections, 1200 Getty Center Dr., Suite 1100, Los Angeles, CA 90049-1688. CJPA.
- 3) Charlton, Maryette. *Maryette Charlton papers, 1929-1998*. Included are Charlton's research correspondence (1962-1995); files (1962-1995) detailing the production of the films "The Universal Theater" (1962) and "Kiesler's Studios" (1965), containing budget records, proposals, shooting cards, working journals, and notes; Kiesler exhibition related material, including catalogs (1964-1998) and reviews of his work, including his theater and set designs (1929-1997). writings by and about Kiesler; interviews and recordings, including tape recorded interviews conducted by Charlton with Lillian Kiesler (1952-1995), sound recordings of his lectures (1947-1965), including ten reel-to-reel tapes of a 1965 seminar at New York University, and two compact disc recordings (1997) of two lectures given in 1965, "Lecture on Space," and "Acoustic in Architecture"; and a 1972 recording of Alfred Barr reading his poem, "Kiesler's Galaxy," first published in Harper's Bazaar magazine in 1952. Archives of American Art, Smithsonian Institution. Archives of American Art, Smithsonian Institution, Washington, D.C. 20560.
- 4) Canadian Centre for Architecture. Frederick Kiesler: vertical file.
- 5) Dreier, Katherine. *Papers/Société Anonyme Archive*. Yale University Beineke Rare Book and Manuscript Library. Yale Collection of American Literature. Correspondence and miscellaneous. Box #'s 20 folders 575-579. Box # 105 folder 2573.
- 6) Haskell, Douglas Putnam. *Papers, 1915-1979 (bulk 1949-1964)*. Physical Details: 56 linear ft. (118 boxes including 5 oversize). Location: Columbia University, Avery Architectural Drawings. Columbia University. Avery Architectural and Fine Arts Library. Drawings and Archives Collection. New York, N.Y. Correspondence with Frederick Kiesler.
- 7) Juilliard School of Music. *Ten years of American opera design [graphic]*. Published: 1931-1941. Physical Details: 7 boxes + 2 map case drawers. Location: New York Public Library. Music Division, The New York Public Library for the Performing Arts, 40 Lincoln Center Plaza, New York, NY.
- 8) Karpel archive of 20th century artists and exhibitions. Published: ca. 1930s-1979. Getty Center Library. The Getty Research Institute for the History of Art and the Humanities, Special Collections, 1200 Getty Center Dr., Suite 1100, Los Angeles, CA 90049-1688. Photographs of Frederick Kiesler's installations at Art of This Century.
- 9) _____. *Frederick Kiesler papers, 1923-1993*. Physical Details: 6.6 linear ft. (partially microfilmed on 4 reels) Location: Archives of American Art, Smithsonian Institution. Archives of American Art, Smithsonian Institution, Washington, D.C. 20560. Summary: Correspondence; biographical material; appointment books; writings and notes; financial records; printed material; and miscellany. Summary: REEL 58: Articles by and about Kiesler, catalogs, and clippings, ca. 1960-1971. Summary: REELS 127-128: Curriculum vitae; bibliography; writings by and about Kiesler; catalogs; reviews; and clippings. Also included are correspondence and a script regarding "Camera Three," a television program, March 20, 1960, on which Kiesler was the guest and discussed The Endless House. Summary: REEL 2399: Lillian Kiesler's "Bibliography of Writings By or About Frederick Kiesler, Biographical Chronology, Theatre Productions," 1980, 189 p. Summary:

UNMICROFILMED: Passports; correspondence with friends, artists, architects, publishers, editors, universities, museums, galleries, and manufacturers; photocopies of letters; appointment books, notes; student's work from Kiesler's design class at Juilliard; financial records, 1941-1963, including bills, income memos, cancelled checks; clippings; printed material; typescript copies of "Catalogue of the Original Works of Frederick Kiesler" and "Inventory of Books in the Personal Library of Frederick Kiesler," both compiled by Lillian Kiesler, 1993; catalogs of Kiesler exhibitions in Vienna, 1988, and at the Whitney Museum of American Art, 1989; and Book of the Shrine (1992). Notes: Some letters are: photocopies.

- 10) _____. *Letter, 1931, to Lewis Mumford*. Physical Details: 1 item (1 l.). In: Lewis Mumford Papers, ca. 1905-1987. Folder 2609. Location: University of Pennsylvania, Rare Book and Manuscript Library. Special Collections Department, Van Pelt Library, University of Pennsylvania, Philadelphia, Pennsylvania 19104-6206. Call Number: Ms. Coll. 2
- 11) _____. *Frederick J. Kiesler collection, 1937-1983*. Details: 1.4 cubic ft. Location: Museum of Modern Art. Notes: Frederick J. Kiesler, 1890-1965.
- 12) _____. *Frederick J. Kiesler Theater collection* Harvard University Theater Collection, Houghton Library, Harvard University, Cambridge, MA 02138.
- 13) _____. *Lillian Kiesler papers, 1920s-2001*. Archives of American Art, Smithsonian Institution. Archives of American Art, Smithsonian Institution, Washington, D.C. 20560.
- 14) Duchamp, Marcel. Mellon Research Collection. Philadelphia Museum of Modern Art. Series on "Kiesler research material."
- 15) Richter, Hans. Archive: papers, correspondence and films with Kiesler. Location: MoMA Queens. 33 Street and Queens Blvd., Queens, New York.
- 16) Wise, Howard—*Gallery records, 1950-1970*. Physical Details: 8.2 linear ft. (partially microfilmed on 1 reel) Location: Archives of American Art, Smithsonian Institution. Archives of American Art, Smithsonian Institution, Washington, D.C. 20560.

Relevant Books from Kiesler's Personal Library:

- 1) Angell, J.R. *Psychology*. New York: Henry Holt & Company, 1908.
- 2) *Autistic Thinking*. Vol. LXIX (U.S.A.): American Journal of Insanity, 1912-1913.
- 3) Asimov, Issac. *The Wellsprings of Life*. New York: The New American Library, 1961.
- 4) Baudouin, Charles. *Suggestion and Auto Suggestion*. New York: Dodd, Mead & Company. 1922.
- 5) Bernheim, H. *Suggestive Therapeutics*. New York, London: G.P. Putnam and Son, 1889.
- 6) Bolsche, Wilhelm. *Das Liebesleben in der Natur*. Jena: Deiderichs, Verlag Eugen, 1909.
- 7) Corti, José. *Surréalisme et Psychologie*. Paris: n.p., 1938.
- 8) C.W. Leadbeater. *Dreams*. Los Angeles: Theosophical Publishing Company, 1918.
- 9) D'Arellano, Sanjurjo. *L'Evolution de la Sexualité et les Etats Intersexuales*. Paris: Libraire Gallimard, 1931.
- 10) Degan, Paul and Trench. *The Basis of Memory*. London: Tribner & Company, Ltd., 1938.

- 11) Ellis, Havelock. *Studies in the Psychology of Sex*. Vol. 1. New York: Random House, 1931.
- 12) Fabre, Jean-Henri. *The Earth of Ours*. New York: Boni Books, 1931.
- 13) Freud, Sigmund. *The Basic Writings of Sigmund Freud*. New York: The Modern Library, Random House, 1938.
- 14) Freud, Sigmund. *A General Introduction to Psychoanalysis*. Garden City, N.Y.: Permabooks, Doubleday & Company, 1953.
- 15) Freud, Sigmund. *Leonardo Da Vinci: A Study in Psychosexuality*. Tr. A.A. Brill. New York: Random House, 1947.
- 16) Freud, Sigmund. *Vorlesungen Zur Einfuhrung in die Psychoanalyse*. Leipzig: Institute Psychoanalytischer, 1922.
- 17) Fromm, Erich. *Sigmund Freud's Sendung*. Frankfurt am Main: Ullstein Bucherei, 1959.
- 18) Geddes, Patrk, and Thomson, Arthur. *Evolution*. New York: Henry Holt, 1911.
- 19) Gibbs, E.L. and F.A. *The Human Electroencephalogram*. (Deutschland): Archive fur Psychiatrie, Journal fur Psychologie und Neurologie, 1936.
- 20) Gibson, Charles and Gunther, Hans. *Was Ist Elektrizitat?* Suttgart: Kosmos, n.d.
- 21) Goldschmidt, Richard. *The Material Basis of Evolution*. New Haven: Yale University Press, 1940.
- 22) Groddeck, Georg. *The Book of the It (Theory of Eros)*. New York: The Mentor Book, New American Library, 1961.
- 23) Huxley, T.H. *Physiography*. New York: F.R.S. Appleton, 1892.
- 24) Jagser, Herber. H. *Electro-Encephalography: II Visual Stimulation and the After-Image as Affecting the Occipital Alpha Rhythm*. Bradley Home and Brown University. (U.S.A.): n.p., n.d.
- 25) James, William. *The Energies of Man*. New York: Muffat, Yard and Company, 1911.
- 26) James, Willam. *Principles of Psychology*. New York: Henry Holt & Company, 1923.
- 27) James, William. *Psychology*. 2 vol. Edition. New York: Henry Holt, 1890.
- 28) Kohler, Wolfgang. *Gestalt Psychology*. New York: Liveright Publishing Corp., 1929.
- 29) Korzybski, Alfred. *Science and Sanity*. Lancaster, Pennsylvania: Science Press Printing Company, 1933.
- 30) Krauskopf, Konrad B. *Fundamentals of Physical Science*. New York: McGraw-Hill Books, 1941.
- 31) Lapp, Ralph E. and Editors of *Life*. *Matter*. New York: The New American Library, 1961.
- 32) Mantell, C.L. *Sparks from the Electrode*. Baltimore: The Williams and Wilken Company, 1933.

- 33) McDougall, W. *An Introduction to Social Psychology*. London: Methuen & Company, 1924.
- 34) Michaelis, L.S. *How the Body Works*. London: Longman's, 1940.
- 35) Morgan, Lloyd C. *Instinkt und Erfahrung*. Berlin: Verlag Julius Springer, 1913.
- 36) Murphy, Gardner. *General Psychology*. New York: Harper & Brothers, 1933.
- 37) Nuttin, Joseph. *Psychoanalysis and Personality*. New York: New World American Library, 1962.
- 38) Osborn, Henry Fairfield. *The Origin and Evolution of Life*. New York: Charles Scribner's Sons, 1917.
- 39) Portmon, Adolf. *Zoologie*. Hamburg: Rowohlt, 1956.
- 40) Reich, Wilhelm. *An Introduction to Orgonomy*. New York: Noonday Press, Farrar, Straus and Cudahy, 1960.
- 41) Reich, Wilhelm. *Listen, Little Man*. New York: Orgone Institute Press, 1948. A document from the archives of the Orgone Institute.
- 42) Rieff, Philip. *Freud: The Mind of the Moralist*. New York: A Doubleday Anchor Book, 1961.
- 43) Rogers, L.W. *Dreams and Premonitions*. Chicago: Theosophical Book Company, 1923.
- 44) Rohde, Erwin. *Psyche*. Tubingen: Verlag von J.C. B. Mohr, 1921.
- 45) Reich, Wilhelm. *William Reich. Selected Writings*. New York: Farrar, Straus & Cudahy, 1961.
- 46) Reich, Wilhelm. *Die Bione*. Oslo: Sexpole, 1938.
- 47) Russell, Bertrand. *The Scientific Outlook*. New York: W.W. Norton and Company, 1931.
- 48) Schneersohn, F. *Studies in the Psycho-Expedition*. New York: The Science of Man Press, 1929.
- 49) Weininger, Otto. *Geschlecht und Charakter*. Wein und Leipzig: Wilhelm Braumuller, 1925.
- 50) Wendt, Herbert. *Out of Noah's Ark*. Boston: Houghton Mifflin Company, 1959.
- 51) Williams, Alexander Coxe Jr. *Some Psychological Correlates of the Electroencephalogram*. New York: Archives of Psychology, no. 240. May 1939.
- 52) Woodruff, L.L. *Foundations of Biology*. New York: The Macmillian Company, 1936.

Other Sources:

- 1) Adorno, Theodor W., *The Culture Industry: Selected essays on mass culture*, ed. J.M. Bernstein. New York: Routledge Classics, 1991.
- 2) Adorno, Theodor W. and Max Horkheimer, *Dialectic of Enlightenment*, tr. John Cumming. New York: Continuum, 2000; Originally published as *Dialektik der Aufklärung*. Social Studies Association, Inc., New York, 1944.

- 3) Agamben, Giorgio. "Time and History," *Infancy and History: Essays on the Destruction of Experience*. New York: Verso, 1993.
- 4) Alberti, Leon Battista. *On the Art of Building in Ten Books*, tr. Joseph Rykwert, Neil Leach, Robert Tavernor. Cambridge: MIT Press, 1988.
- 5) Bachelard, Gaston. *The Poetics of Space*, tr. Maria Jolas. Boston: Beacon Press, 1969.
- 6) Bateson, Bateson. *William Bateson, F.R.S. Naturalist: His Essays and Addresses*. Cambridge: Cambridge University Press, 1928.
- 7) Bateson, Gregory. *Steps to an Ecology of Mind*. Chicago: University of Chicago Press, 1972.
- 8) Bateson, Gregory. *Mind and Nature: A Necessary Unity: Advances in Systems Theory, Complexity, and the Human Sciences*. Cresskill, New Jersey: Hampton Press, 1979.
- 9) Benjamin, Walter, *Walter Benjamin: Selected Writings Volume 1: 1913-1926*, ed. Michael W. Jennings. Cambridge: Harvard University Press, 1999.
- 10) _____, *Walter Benjamin: Selected Writings Volume II: 1927-1934*, ed. Michael W. Jennings. Cambridge: Harvard University Press, 1999.
- 11) _____, *The Arcades Project: Walter Benjamin*, tr. Howard Eiland and Kevin McLaughlin. Cambridge: Harvard University Press, 1999.
- 12) _____, *Walter Benjamin, Illuminations*, ed. Hanna Arendt, tr. Harry Zohn. New York: Schocken Books, 1968.
- 13) _____. *Walter Benjamin: Selected Writings, Volume III, 1935-1938*, ed. Howard Eiland and Michael Jennings, tr. Edmund Jephcott, and Howard Eiland. Cambridge: Harvard University Press, 2002.
- 14) _____, *Walter Benjamin: Selected Writings Volume IV: 1938-1404*, ed. Michael W. Jennings. Cambridge: Harvard University Press, 2003.
- 15) Bergson, Henri, *L'évolution créatrice* (Paris, 1921); English translation *Creative Evolution*, trans. Arthur Mitchell. New York: 1911., Reprinted New York: Dove Publications, 1998.
- 16) Bergson, Henri. *The World of Dreams*, tr. Wade Baskin. New York: Philosophical Library, 1958.
- 17) Bergson, Henri, *Matter and Memory*, tr. by Nancy Margaret Paul and W. Scott Palmer. New York: Zone Books, 1991, reprint 1998.
- 18) Braun, Edward. *The Theater of Meyerhold: Revolution on the Modern Stage*. New York: Drama Book Specialists, 1979.
- 19) Bressani, Martin. "The Life of Stone: Viollet-le-duc's Physiology of Architecture," *Architecture New York: Tectonics Unbound, No. 14*, Ed. Cynthia C. Davidson. New York: Anyone Association, 1996.
- 20) Breton, André, "Declaration VVV" (1942), reprinted in *What is Surrealism?*, ed. Franklin Rosemont. New York: Pathfinder, 1978.

- 21) Breton, André. "Le Message automatique," *Minotaure* 3-4, (December 14, 1933). English translation, André Breton, Paul Eluard, Philippe Soupault, "The Automatic Message," *The Automatic Message, The Magnetic Fields, The Immaculate Conception*, tr. Antony Melville, London: Atlas, 1997.
- 22) Breton, André. "Manifesto," in *Manifestoes of Surrealism*, tr. Richard Seaver and Helen R. Lane. Ann Arbor (1972): 26.
- 23) Carter, Huntly. *The New Spirit of the Russian Theater 1917-28*. New York: Bientano's LTD., 1929. Reprint, New York: Amo Press, 1970.
- 24) Carter, Huntly. *The New Spirit in the European Theater 1914-24*. London: Ernest Bern Limited, 1925.
- 25) Churchill, Henry. "Structural Study Associates," *Shelter*, v. 2, n. 4. (May 1932): 5.
- 26) Clark, John Willis. *The Care of Books*. Cambridge: University Press, 1909.
- 27) Cohen, Arthur A. *Herbert Bayer: The Complete Work*, Cambridge: MIT Press, 1994.
- 28) Colomina, Beatriz. "The Split Wall: Domestic Voyeurism," in *Sexuality and Space*, ed. Beatriz Colomina. New York: Princeton Architectural Press. (1992): 76.
- 29) Colomina, Beatriz. *Privacy and Publicity: Modern Architecture as Mass Media*. Cambridge: MIT Press, 1994.
- 30) Colomina, Beatriz. "Enclosed by Images: The Eameses' Multimedia Architecture," *Grey Room*, ed. Branden Joseph, Felicity Scott and Antoine Picone, Vol. 1, #2, Cambridge: MIT Press (2001): 20.
- 31) Dagonnet, Francois. *Etienne-Jules Marey: La passion de la trace*. Paris: Hazan, 1987.
- 32) Damisch, Hubert. "Toward a Tomb for Adolf Loos", *Grey Room* 01 (Fall 2000).
- 33) Dietz, Albert, "Plastic in Housing," Massachusetts Institute of Technology, Department of Architecture, Rotch Library, 1955.
- 34) Deleuze, Gilles. *Le Bergsonisme*. Paris: Presses Universitaires de France, 1966; English translation *Bergsonism*, tr. Hugh Tomlinson. New York: Zone Books, 1988.
- 35) Deleuze, Gilles. *Leibniz et le baroque*. Paris: Les Editions de Minuit (1988).
- 36) Deleuze, Gilles, "Postscript for Control Societies", *Negotiations 1972-1990*, tr. Martin Joughin. New York: Columbia University Press, 1990.
- 37) Draper, Joan. "The Ecole des Beaux-Ars and the Architectural Profession in the United States: The Case of John Galen Howard, and Joseph Esherick, Architectural Education in the Thirties and Seventies: A Personal View", in *The Architect: Chapters in the History of the Profession*, ed. Spiro Kostof. New York: Oxford University Press (1977): 209-280.
- 38) Driesch, Hans. *Man of the Universe*, tr. W.H. Johnston. London: George Allen & Unwin Ltd., 1929.
- 39) Echaurren, Matta, "Sensitive Mathematics—Architecture of Time," *Minotaure*, no. 11, May 1938, 43, as translated in *Autobiography of Surrealism*, ed. Marcel Jean. New York: Viking Press, 1980.

- 40) Eisenstein, Sergi. "The Cinema as an Outgrowth of Theater: Through Theater to Cinema." *In Aesthetics: A Critical Anthology*. Ed. George Dickie and R. J. Sclafini. New York: St. Martin's Press, 1977.
- 41) Esterow, Milton. "Theatres of Tomorrow Shown at contemporary Museum Here".
- 42) Foster, Hal, *Compulsive Beauty*. Cambridge: MIT Press, 1997.
- 43) Foucault, Michel. *Surveiller et Punir: Naissance de la prison*. Paris: Editions Gallimard, 1975.
- 44) Frampton, Kenneth. "Introduction", *Architecture of Adolf Loos*, ed. Y. Safran and W. Wang. London: Arts Council, 1985.
- 45) Frampton, Kenneth, "Rappel A'Lodre: The Case for the Tectonic," *Architectural design*, v. 60 (New York: St. Martin's Press, 1990).
- 46) France, R. H., *Die Pflanze als Erfinder*. Stuttgart, 1920.
- 47) Freud, Sigmund. *Aus der Geschichte einer infantilen Neurose*, 1918; English translation "From the History of an Infantile Neurosis", tr. J. Strachey, *Standard Edition of the Complete Psychological Works of Sigmund Freud*, ed. J. Strachey et al., 24 vols., London, 1953-74, XVII, 7-122; reprinted in *Three Case Histories*, ed. Philip Reiff. New York: Macmillian Publishing Company, 1963; 1996 edition.
- 48) Freud, Sigmund, *The Ego and the ID*, tr. Joan Riviere and James Strachey. New York: W.W. Norton & Company, 1960.
- 49) Freud, Sigmund. *On Dreams* tr. James Strachey. New York: W.W. Norton & Co., 1952, renewed 1980.
- 50) Freud, Sigmund. *Beyond the Pleasure Principle*, tr. Joan Riviere and James Strachey. New York: W.W. Norton & Company, 1989.
- 51) Fuller, Buckminster. "Correlation," *Shelter*, v. 2, n. 4. (May 1932): 3.
- 52) Fuller, Buckminster. *No More Secondhand God and Other Writings*. Carbondale: Southern Illinois University Press, 1963, 1969.
- 53) Geddes, Patrick. *Cities in Evolution: An Introduction to the Town Planning Movement and to the Study of Civics*. New York: Williams and Norgate, 1915.
- 54) Geddes, Patrick and Arthur Thompson. *Life: Outlines of General Biology*. New York: Harper & Brothers Publishers, 1931.
- 55) Geist, Sidney. *Brancusi*. New York: Grossman, 1968.
- 56) Goethe, Johann Wolfgang von. "The Metamorphosis of Plants," in *Goethe's botany; the Metamorphosis of Plants (1790) and Tabler's Ode to Nature (1782)*, tr. Agnes Arber, *Chronica Botanica*, v. 10, no. 2. Waltham, Mass, 1946.
- 57) Giedion, Sigfried. *Space, Time and Architecture: The Growth of a New Tradition* Cambridge: Harvard University Press (1941).

- 58) Grimal, Pierre. *The Dictionary of Classical Mythology* tr. A.R. Maxwell-Hyslop. New York: Basil Blackwell Inc., 1986.
- 59) Haskell, Douglas. "In Architecture, Will Atomic Processes Create a New 'Plastic' Order?," "Building in the Atomic Age," *Architectural Forum*, (September 1954): 100.
- 60) Haddon, Alfred Cort. *Evolution in Art: As Illustrated by the Life-histories of Designs (1895)*. London: Walter Scott, 1902.
- 61) Henderson, Linda. *The Fourth Dimension and Non-Euclidean Geometry in Modern Art*. Princeton: Princeton University Press, 1983.
- 62) Holmes, Ann. "The Spotlight, alley Group Goes Shopping; Will theater Look Like These?," *Houston Chronicle*, (June 10, 1962).
- 63) Jaensch, E.R. *Eidetic imagery and typological methods of investigation their importance for the psychology of childhood, the theory of education, general psychology, and the psychophysiology of human personality*. New York: Harcourt, Brace, 1930.
- 64) James, William, "Frederic Myers's Service to Psychology," *The Works of William James: Essays in Psychical Research*, ed. F. Burkhardt, and F. Bowers. Cambridge: Harvard University Press (1986).
- 65) James, William. *The Principles of Psychology v. 1 & 2*. New York: Henry Holt, 1890.
- 66) Janik, Allan; Toulmin, Stephen. *Wittgenstein's Vienna*. New York: A Touchstone Book published by Simon & Schuster, 1973.
- 67) Jara, Cynthia. "Adolf Loos's "Raumplan" Theory," *Journal of Architectural Education (1984)*, Vol. 48, No. 3. (Feb., 1995): 185-201.
- 68) Klein, Melanie, *Love, Guilt and Reparation & Other Works 1921-1945*. United States: Melanie Klein Trust, 1973.
- 69) Klein, Melanie, *The Selected Melanie Klein*, ed. Juliet Mitchell. New York: The Free Press, 1986.
- 70) Kracauer, Siegfried, "The Mass Ornament," found in *The Mass Ornament: Weimar Essays*, tr. and ed. Tom Y. Levin. Cambridge: Harvard University Press, 1995. Book originally published as *Das Ornament der Masse: Essays*. Suhrkamp Verlag: Suhrkamp Verlag, 1963.
- 71) Kracauer, Siegfried, "Cult of Distraction," found in *The Mass Ornament: Weimar Essays*, tr. and ed. Tom Y. Levin. Cambridge: Harvard University Press, 1995. Book originally published as *Das Ornament der Masse: Essays*. Suhrkamp Verlag: Suhrkamp Verlag, 1963.
- 72) Kristeva, Julia, *The Kristeva Reader*, ed. Toril Moi. New York: Columbia University Press, 1986.
- 73) Kuhns, David F. *German Expressionist Theater: the Actor and the Stage*. New York: Cambridge University Press, 1997.
- 74) Kulka, Heinrich. *Adolf Loos: Das Werk des Architekten*. Vienna: Schroll, 1931.

- 75) Lavin, Sylvia. , "Open the Box: Richard Neutra and the Psychologizing of Modernity," *Assemblage*, no. 40. Cambridge: MIT Press, (1999): 6-25.
- 76) Lawder, Standish D. *The Cubist Cinema*. New York: New York University Press, 1975.
- 77) Lawrence, D.H. "Introduction to Pictures", *Late Essays and Articles*, ed. James T. Boulton. Cambridge: Cambridge University Press, 2004.
- 78) Le Corbusier, *New World of Space*. New York: Reynal & Hitchcock, 1948.
- 79) Leet, Stephen. *Richard Neutra's Miller House*. New York: Princeton Architectural Press, 2004.
- 80) Loos, Adolf. "Theater," *Exhibition Catalogue of International Theatre Exposition*, 6-7.
- 81) Loos, Adolf. *Architectur*. 1910. English translation "Architecture," *The Architecture of Adolf Loos: An Arts Council Exhibition*, London: Arts Council of Great Britain, 1985.
- 82) Loos, Adolf. "Ornament and Crime", 1908. English Translation *Programs and Manifestoes on 20th-century architecture*, ed. Ulrich Conrads. Cambridge: MIT Press, 1975.
- 83) Loos, Adolf, "The Theater." *Little Review: The International Theatre Exposition New York 1926, Special Theater Number, February 27 to March 15*.
- 84) Loos, Adolf, "The Principle of Cladding (1898)," in *Spoken into the Void: Collected Essays 1897-1900*, Tr. Jane O. Newman and John H. Smith. Cambridge: MIT Press, 1982.
- 85) Mallgrave, Harry Francis, "Introduction," in *Gottfried Semper: The Four Elements of Architecture and Other Writings*, Tr. Harry Francis Mallgrave. New York: Cambridge University Press, 1989.
- 86) MacGowan, Kevin. *The Theater of Tomorrow*. New York: Boni and Liveright, 1921.
- 87) Mallgrave, Harry Francis. "Introduction," in *Gottfried Semper: The Four Elements of Architecture and Other Writings*, Tr. Harry Francis Mallgrave. New York: Cambridge University Press, 1989.
- 88) Marcus, Leonard S. *The American Store Window*. London: The Architectural Press, 1978.
- 89) Marinetti, Filippo. "The Variety Theater: September 29, 1913," in *Marinetti: Selected Writings*, ed. by R.W. Flint. New York: Farrar, Straus and Giroux, 1972.
- 90) Marinetti, Filippo. "Futurist Theory and Invention, January 11, 1925," in *Marinetti: Selected Writings*, ed. by R.W. Flint. New York: Farrar, Straus and Giroux, 1972.
- 91) McBride, Henry. "Modernism Rampant: the New Sculptors and the New Painters Exalt the New Freedoms," *The New York Sun, Art [section]*. (Friday, March 7, 1947): 29.
- 92) McLuhan, Marshall. *Understanding Media: The Extensions of Man*. New York: McGraw-Hill, 1964.
- 93) Meikle, Jeffery L., *American Plastic: a Cultural History*. Rutgers University Press: New Brunswick, 1995.

- 94) Mensendieck, Bess M. *The Mensendieck System of Functional Exercises: For educating the musculature according to the mechanical laws that underlie its operation, and for improving the muscle-automatisms that are used for performing every day movements, so that their effect upon the body architecture may be constructive*, Vol 1. Portland, Maine: The Southworth-Anthoensen Press, 1937.
- 95) Moholy-Nagy, L.. "Theater, Circus, Variety," in *The Theater of the Bauhaus*, ed. Schlemmer, O, L. Moholy-Nagy and F. Molnár, tr. Arthur S. Wensinger. Middletown, Connecticut: Wesleyan University Press, 1961.
- 96) Mumford, Lewis. *Technics and Civilization*. New York: Harcourt, Brace & Company, 1934.
- 97) Mumford, Lewis. "The Death of the Monument," *Circle: International Survey of Constructive Art*. 263-270.
- 98) Mondrian, Piet. ""Neoplasticism as Style," "The New Plastic as 'Abstract-Real Painting: The Plastic Means and Composition," "The Rationality of Neoplasticism," "From the Natural to the Abstract: From Indeterminate to the Determinate," in *De Stijl*, ed. Hans L.C. Jaffé. New York: H.N. Abrams, 1971.
- 99) Moos, Stanislaus Von. "Le Corbusier and Loos." *Raumplan versus Plan Libre: Adolf Loos Le Corbusier*. 23.
- 100) Moreno, J. L., *Das Stegreiftheater*. Postdam, 1923.
- 101) Moreno, J. L., *The Theater of Spontaneity*. New York: Beacon House, 1947.
- 102) Ockman, Joan. , "The Road Not Taken: Alexander Dörner's Way Beyond Art," *Autonomy and Ideology: Positioning an Avant-Garde in America*, ed. R. E. Somel. New York: Monacelli, 1997.
- 103) O'Konor, Louise. *Viking Eggeling 1880-1925: Artist and Film-Maker*. Stockholm, 1971.
- 104) Pfammatter, Ulrich. *The Making of the Modern Architect and Engineer: The Origins and Development of a Scientific and Industrially Oriented Education*, tr. Madeline Ferretti-Theillig. Boston: Birkhäuser, 2000.
- 105) Phillips, Stephen. "Plastics," *Cold War Hothouses* ed. Beatriz Colomina, et. al. New York: Princeton Architectural Press, (2004): 91-124.
- 106) Pichel, Irving. *Modern Theaters*. New York: Harcourt, Brace and Company, 1925.
- 107) Prampolini, Enrico. "The Futurist Stage (Manifesto) 1915," in *The Documents of 20th – Century Art: Futurist Manifestos Edited and with and Introduction by Umbro Apollonio*, ed. Motherwell, Robert and Bernard Karpel, tr. Robert Brain, R.W. Flint, J.C. Higgitt, Caroline Tisdall. New York: Viking Press, 1970.
- 108) Rabinbach, Anson, *The Human Motor: Energy, Fatigue, and the Origins of Modernity*. Berkeley: University of California Press, 1992.
- 109) Rank, Otto. *The Double, A Psychoanalytic Study*, ed. Harry Tucker. Chapel Hill: The University of North Carolina Press, 1971. As originally published as *Der Doppelgänger*. 1914, 1925.
- 110) Rank, Otto. *Psychology and the Soul: A Study of the Origin, Conceptual Evolution, and Nature of the Soul*, tr. Gregory C. Richter and E. James Liberman (Baltimore: John Hopkins

- 111) Rank, Otto. *The Trauma of Birth*. New York: Dover Publications, Inc., 1993. As originally published as *Trauma der Geburt*, English Edition. London: Kegan Paul, Trench, Trubner and Co., 1929.
- 112) Reich, William. *Selected Writings: An Introduction to Orgonomy*. New York: Farrar, Straus and Cudahy, 1960.
- 113) Rohdenburg, Theodore. *A History of the School of Architecture: Columbia University*. New York: Columbia University Press, 1954.
- 114) Room, Adrian. *Room's Classical Dictionary*. London: Routledge & Kegan Paul, 1983.
- 115) Rudnitsky, Konstantin. *Russian and Soviet Theater 1905-1932*. ed. Dr. Milne, Lesley, tr. Permar, Roxane. New York: Harry N. Abrams, Inc., 1988.
- 116) Ruskin, John. *The Seven Lamps of Architecture*. New York: Farrar, Straus and Giroux, 1979.
- 117) Rykwert, Joseph, *On Adam's House in Paradise: The Idea of the Primitive Hut in Architectural History*, New York: Modern Museum of Art, 1972.
- 118) Schlemmer, Oskar "a lecture with stage demonstrations," *Bauhaus 1919-1928*. ed. Herbert Bayer, Walter Gropius, Ise Gropius. London: Martin Secker & Warburg Limited, 1975.
- 119) Schnapp, Jeffery. "Border Crossings: Italian/German Peregrinations of the Theater of Totality," *Critical Inquiry* 21. University of Chicago. (Autumn 1994): 93.
- 120) Semper, Gottfried. "Style in the Technical and Tectonic Arts or Practical Aesthetics: A Handbook for Technicians, Artists, and Patrons of Art," (1860): 190.
- 121) Semper, Gottfried. *Gottfried Semper: The Four Elements of Architecture and Other Writings*, Tr. Harry Francis Mallgrave. New York: Cambridge University Press, 1989.
- 122) Staniszewski, Mary Anne. *The Power of Display: A History of Exhibition Installations at the Museum of Modern Art*. Cambridge: MIT Press, 1998.
- 123) Stein, Jack M. *Wagner & The Synthesis of the Arts*. Detroit: Wayne State University Press, 1960.
- 124) *Theo van Doesburg*, ed. Joost Baljeu. New York: Macmillan Publishing Co., Inc., 1974.
- 125) Tzara, Tristan, "On a Certain Automatism of Taste," *Minoture* 3-4, December 1933, 84, as translated in *Autobiography of Surrealism*, ed. Marcel Jean. New York: Viking Press, 1980.
- 126) Vidler, Anthony. "The Explosion of Space: Architecture and the Filmic Imaginary," in *Film Architecture: Set Designs from "Metropolis" to "Bladerunner"*, ed. Dietrich Neumann. New York: Prestel, 1996.
- 127) Virilio, Paul. *The Vision Machine*. Indianapolis: Indiana University Press, 1994.
- 128) Wigley, Mark. "Whatever Happened to Total Design," *Harvard Design Magazine* v. 5. (Summer 1998).